REA Form 804
(Rev. 8-56)

DESCRIPTION OF UNITS, SPECIFICATIONS, AND DRAWINGS FOR 7.2/12.5 KV LINE CONSTRUCTION

RURAL ELECTRIFICATION ADMINISTRATION
U. S. DEPARTMENT OF AGRICULTURE

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PART I. DESCRIPTION OF CONSTRUCTION UNITS
(For Use in Preparing Contractor's Proposal)

The proposal is to be made on a unit basis so that the Engineer may specify any combination of construction units that he may deem necessary. The various construction units that are included in this proposal, and upon which quotations are required, are defined by symbols and descriptions set forth in this part I. Separate assembly units are designated for each different arrangement which may be used in the construction of the Project. This proposal is based on a consideration of each unit in place and includes only the materials listed on the corresponding Construction Drawings.

1. Pole Unit. Consists of one pole in place. It does not include pole-top assembly unit or other parts attached to the pole. The first two digits indicate the length of the pole; the third digit shows the classification per A.S.A. (Example: 25-6 means a pole 25 feet long, class 6.)

2. Pole-top Assembly Unit. Consists of the hardware, crossarms, and their appurtenances, insulators, etc., except tie wire, required to support the primary conductors. It does not include the pole. Crossarm pins include 2 inches by 2 inches by 1/8 inch washer, nut, and locknut.

3. Guy Assembly Unit. Consists of the hardware and wire, and guy insulator where necessary. An overhead guy assembly consists of an overhead guy, a pole, and a down guy, each of which is listed separately. Guy guards are designated separately.

4. Anchor Assembly Unit. Consists of the anchor with rod complete, ready for attaching the guy wire.

5. Conductor Assembly Unit. Consists of 1,000 feet of a single conductor for primaries, secondaries, or both, and includes tie wires, sleeves for splicing, and armor rods with clips or armor wire where necessary. Tree trimming necessary for installing secondaries on poles not carrying primary line is included with the conductor assembly unit and shall be performed in accordance with the directions of the Engineer. The length of conductor shall be determined by taking the sum of all straight horizontal span distances between pole stakes. The conductor sizes listed are the manufacturer's designation.

6. Transformer Assembly Unit. Consists of the transformer, its protective equipment, and its hardware and leads with their connectors and supporting insulators and pins. This unit does not include the pole top, secondary, service, or grounding assemblies.

7. Secondary Assembly Unit. Consists of the hardware, insulators, etc., required to support the secondary conductors. It does not include the secondary conductors, or any hardware, insulators, etc., added to support the service conductors.

8. Service Assembly Unit. Consists of 1,000 feet of single conductor measured horizontally between conductor supports. The service shall be connected to the secondary or transformer and 2 feet of conductor shall be left for connecting to the consumer's service entrance, but in computing compensation to the Contractor only the horizontal distance between conductor supports shall be used. The service assembly unit includes tie wires, sleeves for splicing, connectors, and consumable materials. Tree trimming necessary for installing services is included with the service assembly unit and shall be performed in accordance with the directions of the Engineer. The hardware and insulators at the points of conductor support are designated as separate items.

9. Grounding Assembly Unit. Consists of the conductor, ground rod, grounding plate, connectors and clamps as shown on the respective drawings for the various types.

10. Miscellaneous Assembly Unit. Consists of additional units needed in the Project for line construction but not otherwise listed in the Proposal.

11. Right-of-way Clearing Units.

R1-10. The unit for purpose of quoting is 1,000 feet in length and 10 feet in width (to be measured 10 feet on one side of the pole line) of actual clearing of right-of-way. This includes clearing of underbrush, tree removal, and such tree trimming as may be required to leave an unobstructed right-of-way from the ground up on one side of the line of poles carrying conductors other than secondaries and services of the width specified. The length of actual clearing shall be measured in a straight line parallel to the horizontal line between stakes and across the maximum dimension of foliage cleared projected to the ground line. All trees and underbrush across the width of the right-of-way, as designated by the Engineer, shall be considered to be grouped together as a single length in measuring the total length of clearing. Spaces along the right-of-way in which no trees are to be removed or trimmed or underbrush cleared shall be omitted from the total measurement. All

length thus arrived at, added together and divided by 1,000, shall give the number of 1,000-foot R1-10 units of clearing. This unit includes the removal or topping, at the option of the Contractor, of danger trees outside of the right-of-way when so designated by the Engineer. (Danger trees are defined as dead or leaning trees which, in falling, will affect the operation of the line.) The Contractor shall not remove or trim shade, fruit, or ornamental trees unless so directed by the Engineer.

R1-20. This unit is identical with R1-10 except that width is 20 feet (to be measured 10 feet on each side of the pole line).

R1-30. This unit is identical with R1-10 except that width is 30 feet (to be measured 15 feet on each side of the pole line).

R1-40. This unit is identical with R1-10 except that width is 40 feet (to be measured 20 feet on each side of the pole line).

12. Substation Assembly Unit. Consists of the complete substation ready for connection of the line conductors, as shown on the substation drawing.

PART II. DESCRIPTION OF SYSTEM LINE CHANGES

The general heading of Line Changes applies to the changing of existing lines or portions thereof from their existing phasing, wire size, and type to new phasing, wire size, and type and the removal of existing lines or portions thereof and replacing with new lines in close proximity thereto. In general line changes involve three types of assembly units as follows:

Section H--Conversion assembly units;

Section I--Removal assembly units;

Section N--New construction assembly units on existing lines or in replacing lines.

The proposal is to be made on a unit basis so that the Engineer may specify any combination of assembly units that he may deem necessary. Work performed under these sections shall be performed under the special conditions of energization as set forth in the Proposal. The various assembly units that are included in this Proposal and upon which quotations are required are defined by symbols and descriptions set forth in this Part II.

1. Section H--Conversion Assembly Units

Conversion assembly units are pole-top assemblies and cover the furnishing of all labor and additional materials for changing an existing assembly unit to a new assembly unit, utilizing certain items of materials of the existing assembly unit on poles to be left in place.

Where replacement of a pole is required, the existing pole and pole-top assembly will be removed under Section I and the new pole and pole-top assembly will be installed according to Section N and no H units will be involved.

Any materials removed from the existing assembly units which are not required in the construction of the conversion assembly unit become the property of the Contractor and may, with the permission of the Engineer, be reused by the Contractor in the construction of other assembly units called for in the Construction Contract.

Conversion assembly units are specified by the prefix H with the new construction assembly unit designation shown first and the existing assembly unit designation shown last. For example, an H B1-A1 signifies the conversion of an existing A1 assembly unit to a B1 assembly unit (as was defined in the description of construction assembly units). In this instance the Contractor utilizes the existing pin-type insulator, single upset bolt and neutral spool in the construction of the new assembly unit. The Contractor furnishes the additional crossarm, crossarm pins, braces, machine bolt, carriage bolts, lag screw, and insulator required for the new unit. The Contractor takes possession of the pole-top pin and two machine bolts and with the permission of the Engineer may reuse these elsewhere in the construction of the project. The Contractor will not be held accountable to the Owner for the materials he so acquires.

The Conversion assembly units also include the furnishing of all labor and materials in the transferring, resagging and retying of conductors from one position on the pole to a different position on the pole where such transfers are required. Where replacement of conductor is required, the existing conductor will be removed under Section I and the new conductor installed under Section N.

The Contractor's proposal form for conversion assemblies is divided into three subsections. These subsections are as follows:

a. Subsection H (C-A). Conversion of single-phase assemblies to three-phase assemblies as described:

Unit	Description
H (C1-A1)	(To be filled in by Engineer, i.e., conversion of existing A1 on pole to C1.)
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	

b. Subsection H (B-A). Conversion of single-phase assemblies to V-phase assemblies as described:

Unit	Description
H (B1-A1) H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____ H_____	(To be filled in by Engineer, i.e., conversion of existing A1 on pole to B1.)

c. Subsection H (C-B). Conversion of V-phase assemblies to three-phase assemblies as described:

Unit	Description
H (C1-B1)	(To be filled in by Engineer, i.e., conversion of existing B1 on pole to C1.)
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	
H	

2. Section I--Removal Assembly Units.

Removal assembly units cover the furnishing of all labor for the removal of existing units of construction from existing lines, disassembling into material items, and all labor and transportation for the returning of all materials to the warehouse of the Owner in an orderly manner or transporting elsewhere to the site of the project for reuse in the prosecution of this Contract as approved by the Engineer.

The Contractor will be charged by the Owner for the full value of all materials removed under this section at the value shown in Table C. Such charges will be placed against the Contractor as units are removed and the value will be deducted from the total value of installed assembly units for determination of the work accomplished for purposes of monthly progress payments to the Contractor.

Of the materials listed in Table C to be removed from existing lines, certain materials will be reused in the construction of the Project. Such materials to be reused are listed in Table C-1. Materials other than those listed in Table C-1 shall, if not damaged in handling, be returned to the Owner for full credit at the values shown in Table D. The Contractor will be allowed full credit for all material items, other than those listed in Table C-1, returned to the Owner which, in the opinion of the Engineer, were not damaged by the Contractor in removal and handling even though the materials may not be reusable for reasons of obsolescence or deterioration. Such credits shall be allowed the Contractor as materials are returned to the Owner's warehouse and shall be added to the total value of installed assembly units for determination of the work accomplished for purposes of monthly progress payments to the Contractor.

The unit removal prices shall include all material and labor required to reinstall in accordance with specifications any conductors temporarily detached. The Contractor will reinstall at his own expense any other units removed by him for his own convenience.

The removal units are specified by the prefix I and followed by the assembly unit designation of existing assembly unit to be removed. For example, an I-A1 signifies the removal of an A1 assembly unit. The following special notes apply to specific removal units:

a. Poles. All poles of the same height, regardless of pole class, are designated by the same unit. Thus an I-30-foot pole signifies the removal of a 30-foot pole of any class. The contractor is not required under this unit to remove from the pole any ground wire or pole numbering attached to the pole. This unit includes the refilling and tamping of holes in a workmanlike manner unless they are to be reused.

b. Pole-top Assemblies. The unit for removal of pole-top assemblies is designated by the prefix I followed by the symbol of the assembly to be removed, thus I-A5-4 signifies the removal of an A5-4 assembly unit.

The unit of removal of pole-top assemblies includes any necessary handling, resagging, and retying of conductors in those cases where an existing pole-top assembly will be removed and replaced by a new pole-top assembly and where any existing conductor is to be reused.

The unit of removal of pole-top assemblies also includes any holding or handling of mainline or tap conductors at tap lines, angles, and deadends where such is involved, and the reinstalling of such conductor in accordance with the conductor specifications herein; for example, an I-A5-4 will include the disconnection of the tap conductors, snubbing off the tap line at the nearest practical point and the reconnection and resagging of these tap conductors if necessary to the new tap assembly when installed. The new unit of construction, however, will be specified separately in Section N.

c. Guys. All guys regardless of length, type of attachment, or size of guy strand are specified by the same unit; thus an I-E signifies the removal of any guy.

d. Anchors. Only anchor rods are to be removed by the Contractor in anchor removal units. The anchors will be left in the ground; thus an I-F signifies the removal of any anchor rod.

e. Conductor. The conductor removal unit covers the removal of 1,000 feet of conductor and reeling or coiling it in a workmanlike manner in such a way that it can be reused by the Contractor or the Owner. The Owner will furnish to the Contractor reels for the reeling of such conductor if it is to be returned to the Owner's warehouse on reels. The Contractor will retain possession of all jumpers, tie wire, armor rods, and other conductor accessories removed. These items will not be returned to the Owner. The removal unit for each size of conductor is shown by the prefix I followed by D and the conductor type; thus an I-D-6A-CWC signifies the removal unit for 1,000 feet of 6A Copperweld-copper conductor.

f. Transformers. The unit for removal of transformer assembly units is divided into two sections, (1) Conventional Transformer Assembly, and (2) Self-protected Transformer Assembly. Only one unit is specified for each type, and all sizes of transformers from 1 to 15 kva within each group will be covered by the same unit. "Self-protected" refers to transformers where all protective equipment is mounted on or within the transformer. "Conventional" refers to transformers where protective equipment is mounted separately from the transformer. The unit is designated by the prefix I followed by the description of the unit to be removed; thus I-G Conventional signifies the removal of a conventional transformer assembly for any size transformer from 1 to 15 kva.

g. Secondary Units. The unit for removal of secondary assemblies includes, in addition to the removal of the assembly itself, all necessary handling such as untying, resagging, and retying of secondary conductor where existing secondary conductor is to be reused.

In addition, the unit for removal of the secondary assembly includes the handling or holding of any conductor at tap lines where such is involved, and the reinstalling of such tap conductor in accordance with the conductor specifications herein. The unit removal of secondary assemblies is designated by the prefix I followed by the symbol of the secondary assembly involved; for example, an I-J6 signifies the removal of a J6 secondary assembly. In this instance if a tap line is involved, it includes the disconnection of the tap conductor, snubbing off the tap line at the nearest practical point and the reconnection and resagging of the tap conductor to the new secondary assembly when installed; such new unit of construction however being separately specified under Section N.

h. Service Unit. The service removal unit is designated by the prefix I followed by the symbol of the service unit to be removed; thus an I-K14 signifies the removal of a K14 service assembly unit.

No separate removal units will be specified for service wire units except where complete removal is required. Where service conductor must be dropped to provide for removal and installation of service attachment units, the labor of dropping and reinstalling service conductor, together with any additional service conductor and sleeves to complete the reinstallation thereof is included in the unit for removal of the service wire attachment.

In the above instance the I-K14 will include the disconnecting and reconnecting of the service wire according to specifications.

i. Miscellaneous Units. The miscellaneous removal unit is designated by the prefix I followed by the symbol of the unit to be removed; thus an I-M3-1 signifies the removal of an M3-1 assembly unit. (The Engineer is to furnish under this section any detail descriptions of Miscellaneous removal units as are required.)

The units as covered by this Section I, Removal Assembly Units, are generally the same as those described in part I, Description of Construction Units. Where such description is not correct or sufficiently explicit, the following descriptions will apply:

Unit	Description
I	(To be filled in by Engineer.)

TABLE C. Unit Material Values of I Units Chargeable to Contractor

Unit No.	Number of Units	Unit Material Value*	Extended Value

*Unit values are based on item values from Table D.

TABLE C-1. Material Items To Be Reused

REA Item Letter Designation*	Description of Material Item	Number of Items

*See "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers".

TABLE D. Values of Material Items Creditable to Contractor

REA Item Letter Designation*	Description of Material Item	Item Value

*See "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers".

TABLE D. Values of Material Items Creditable to Contractor--Continued

REA Item Letter Designation*	Description of Material Item	Item Value

*See "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers".

TABLE D. Values of Material Items Creditable to Contractor--Continued

REA Item Letter Designation*	Description of Material Item	Item Value

*See "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers".

3. Section N--New Construction Assembly Units on Existing Lines or in Replacing Lines.

The purpose of this section is to list complete new units of construction where such units are to be added to existing lines or installed in replacing lines.

The units as covered by this section are the same as the units described in part I, Description of Assembly Units, except that these units are prefixed by the letter N.

For example, an N40-6 unit covers the furnishing of all material and labor for the installation of a 40-6 pole either in an existing distribution line being operated by the Owner or in a new line being constructed to replace an existing distribution line being operated by the Owner.

PART III. SPECIFICATIONS FOR CONSTRUCTION

1. General.

All construction work shall be done in a thorough and workmanlike manner in accordance with the Staking Sheets, Plans and Specifications, and Construction Drawings, and shall be subject to the acceptance of the Engineer and the Administrator.

Deviations from the Staking Sheets, Plans and Specifications, and Construction Drawings shall not be permitted except upon the written permission of the Engineer given with the approval of the Administrator.

2. Scope.

	Volts	Miles
Miles of line		
Primary lines:		
Single-phase two-wire	_____	_____
V-phase three-wire	_____	_____
Three-phase four-wire	_____	_____
Secondary:		
Two-wire secondary on secondary poles	_____	_____
Three-wire secondary on secondary poles	_____	_____
Services:		
Two-wire services	_____	_____
Three-wire services	_____	_____
Total miles of line		_____
Underbuild		
One-wire secondary	_____	_____
Two-wire secondary	_____	_____
_____	_____	_____
Total miles of underbuild		_____
Line changes		
Single-phase to V-phase	_____	_____
Single-phase to three-phase	_____	_____
V-phase to three-phase	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
Total miles		_____
Removals		
Single-phase two-wire	_____	_____
V-phase three-wire	_____	_____
Three-phase four-wire		
_____	_____	_____
Total miles		_____

	Number
Miscellaneous	
Services:	
Two-wire to meter	_____
Three-wire to meter	_____
Three-phase to meter	_____
Secondaries to meter:	
Two-wire secondary to yard pole	_____
Three-wire secondary to yard pole	_____
Three-phase secondary to yard pole	_____
Substations:	
Kva _____ Voltage _____ Type _____	_____
Kva _____ Voltage _____ Type _____	_____
Clearing units	_____
Consumers	_____

The total length of the project lines shall be determined by taking the sum of all straight horizontal span distances between pole stakes or from center to center of poles carrying conductors, plus the length of service drops measured horizontally from center of last pole to the point of attachment to the consumer's building.

The Project is located in the County or Counties of _____
State of _____. Said lines are to be connected to the primary system of _____
_____
at the following locations _____
_____
All of the above is as included within the terms of the Loan Contract.

3. Drawings and Maps.

The key map showing the source of power supply and the general route and location of all primary lines in this Project, and the detail maps for each individual primary route, are listed separately hereinafter and are part of these Plans and Specifications and no deviations from these maps shall be made without the approval of a Construction Contract Amendment by the Administrator. The Construction Drawings, showing the types of construction to be used for the various conditions along the lines, also are listed separately hereinafter and are part of these Specifications.

4. Staking of Line.

The Engineer shall determine the locations and types of all pole units and other unit assemblies to be installed. As a part of the release for construction, the Contractor shall receive from the Engineer five complete sets of staking sheets and a reference sketch showing the location of the poles and other unit assemblies.

5. Distributing Poles.

In distributing the poles, large, choice, close-grained poles shall be used for transformer, deadend, angle, and corner poles.

6. Pole Setting.

The minimum depth for setting poles shall be as follows:

Length of Pole (feet)	Setting in Soil (feet)	Setting in All Solid Rock (feet)
20	4.0	3.0
25	5.0	3.5
30	5.5	3.5
35	6.0	4.0
40	6.0	4.0
45	6.5	4.5
50	7.0	4.5
55	7.5	5.0
60	8.0	5.0

"Setting in Soil" specifications shall apply:

a. Where poles are to be set in soil.
b. Where there is a layer of soil of more than two (2) feet in depth over solid rock.
c. Where the hold in solid rock is not substantially vertical or the diameter of the hole at the surface of the rock exceeds approximately twice the diameter of the pole at the same level.

"Setting in All Solid Rock" specifications shall apply where poles are to be set in solid rock and where the hole is substantially vertical, approximately uniform in diameter and large enough to permit the use of tamping bars the full depth of the hole.

Where there is a layer of soil two (2) feet or less in depth over solid rock, the depth of the hole shall be the depth of the soil in addition to the depth specified under "Setting in All Solid Rock" provided, however, that such depth shall not exceed the depth specified under "Setting in Soil."

On sloping ground, the depth of the hole always shall be measured from the low side of the hole.

All holes shall be backfilled with soil or small rock and all pole holes in rock shall be inspected and approved in writing by the System Engineer before being backfilled.

Poles shall be set so that alternate crossarm gains face in opposite directions, except at terminals and deadends where the gains of the last two poles shall be on the side facing the terminal or deadend. On unusually long spans, the poles shall be set so that the crossarm comes on the side of the pole away from the long span. Where pole top pins are used, they shall be on the opposite side of the pole from the gain, with the flat side against the pole.

All unused holes in poles shall be plugged prior to erection, using treated wood dowel pins.

7. Pole Alignment and Raking.

Poles shall be set in alignment and plumb except at corners, terminals, angles, junctions, or other points of strain, where they shall be set and raked against the strain so that the conductors shall be in line. Poles shall be raked against the conductor strain not less than 1 inch for each 10 feet of pole length nor more than 2 inches for each 10 feet of pole length after conductors are installed at the required tension.

The Contractor is responsible for setting poles in alignment according to the staking sheets. If the Contractor should find stakes out of alignment, the Engineer will, upon request of the Contractor, realign stakes according to the staking sheets.

8. Tamping.

Poles must be thoroughly tamped the full depth. Excess dirt must be banked around the pole.

9. Grading of Line.

When using high poles to clear obstacles such as buildings, foreign wire crossings, railroads, etc., there shall be no upstrain on pin-type insulators in grading the line each way to lower poles.

10. Guys.

The Engineer shall determine all guy locations and specify the type of guy. Guys shall be placed before the conductors are strung and shall be attached to the pole as shown in the Construction Drawings.

11. Anchors.

All anchors and rods shall be in line with the strain and shall be so installed that approximately 6 inches of the rod remain out of the ground.

When a cone anchor is used, the hole, after the anchor has been set in place, shall be backfilled with coarse crushed rock for 2 feet above the anchor, tamping during the filling.

The setting of each anchor as regards depth, position, and expansion shall be inspected by the Engineer and the Engineer's approval given in writing before the anchor hole shall be backfilled.

All anchors must be thoroughly tamped the full depth of the hole.

12. Conductors.

Conductors must be handled with care. Conductors shall not be tramped on or run over by vehicles. Each reel shall be examined and the wire shall be inspected for cuts, kinks, or other injuries. Injured portions shall be cut out and the conductor spliced. The conductors shall be pulled over suitable rollers or stringing blocks properly mounted on pole or crossarm if necessary to prevent binding while stringing.

The neutral conductor should be maintained on one side of the pole (preferably the road side) for tangent construction and for angles not exceeding 30 degrees.

With pin-type insulators the conductors shall be tied in the top groove of the insulator on tangent poles and on the side of the insulator away from the strain at angles. Pin-type insulators shall be tight on the pins and on tangent construction the top groove must be in line with the conductor after tying in.

For neutral and secondary conductors on poles, insulated brackets (Material Item da) may be substituted for the single and double upset bolts on angles of 0° to 5° in locations known to be subject to considerable conductor vibration.

13. Splices, Deadends, Taps, and Jumpers.

Conductors shall be spliced and deadended as shown on the Construction Drawings. There shall be not more than one splice per conductor in any span and splicing sleeves shall be located at least 10 feet from the conductor support. No splices shall be located in Grade B crossing spans and preferably not in the adjacent spans.

Jumpers and other leads connected to line conductors shall have sufficient slack, as shown on the Construction Drawings, to allow free movement of the conductors. Where slack is not shown on these drawings it will be provided by at least two bends in a vertical plane, or one in a horizontal plane, or the equivalent.

All leads on equipment such as transformers, reclosers, etc. shall be of #6 minimum copper conductivity using conductor indicated below:

_____ soft drawn solid copper

_____ soft drawn stranded copper

_____ soft drawn stranded all aluminum with suitable bimetallic sleeves where connected to unplated bronze equipment terminals

When connecting conductors of different metals, connectors which cause no galvanic action shall be used.

With all conductors, connectors and hot-line clamps shall be installed as shown on guide drawings, near the conductor support. On all hot-line clamp installations, the clamp shall be installed so that it is permanently bonded to the load side of the line, allowing the jumper to be deenergized when the clamp is disconnected. This applies in all cases, even where the line layout is such that the tap line is in actuality the main line back to the power source.

14. Tie Wires, Etc.

All ties shall be in accordance with the Construction Guide Drawings as follows:

for copper and copper type conductors	Drawing _____
for ACSR conductor	" _____
_____	" _____
_____	" _____

An approved locknut shall be installed on all bolts or threaded hardware such as insulator pins, upset bolts, etc.

15. Sagging of Conductors.

Conductors shall be sagged in accordance with the Conductor Manufacturer's recommendations which shall be furnished to the Contractor by the Engineer. When so specified in the Proposal conductors shall be prestretched and then sagged in accordance with the proper final sag and tension charts supplied by the conductor manufacturer and furnished to the Contractor by the Engineer.

All conductors shall be sagged evenly, and if prestretched, a tension indicator approved by the Engineer shall be used. The stringing and sagging tensions shall be supplied by the Engineer.

The air temperature at the time and place of stringing shall be determined by a certified etched glass thermometer.

The sag of all conductors after stringing shall be in accordance with the Conductor Manufacturer's recommendations, except that a maximum increase of 3 inches of the specified sag in any span will be acceptable: Provided, however, that under no circumstances will a decrease in the specified sag be allowed. While it is the responsibility of the Project Engineer to so design the line that the required clearances are obtained, the Contractor shall not be relieved from its responsibility of properly sagging conductor as above stated.

16. Clearing Right-of-way.

In preparing the right-of-way, trees shall be removed, underbrush cleared, and trees trimmed so that the right-of-way, except for tree stumps which shall not exceed _____ in height, shall be clear from the ground up and of the width specified in the Proposal. Trees fronting each side of the right-of-way shall be trimmed symmetrically unless otherwise directed by the Engineer. Dead trees beyond the right-of-way which would strike the line in falling shall be removed. Leaning trees beyond the right-of-way which would strike the line in falling and which would require topping if not removed may be removed or topped at the option of the Contractor except that the Contractor shall trim and not remove shade, fruit, or ornamental trees unless otherwise directed by the Engineer.

Trees that are felled shall be cut to commercial wood length and left on the side of the right-of-way for the landowner. Commercial wood length means the length designated by the Engineer but in no case shall it be required to be less than _____ (_____) feet. Brush, branches, and refuse shall, without delay, be disposed of by such of the following methods as the Engineer will direct (Engineer to strike out methods not to be used):

a. Burned.
b. Removed from the vicinity of the right-of-way.
c. Piled on one side of the right-of-way in such manner as not to obstruct roads, ditches, drains, etc.
d. Other (describe) _____

_____

_____ _____
(Engineer) (Date)

All right-of-way operations shall be carried out as directed by the Engineer in a manner to preserve symmetrical appearance and in accordance with the Construction Drawings.

17. Services.

The span length of any covered wire shall not exceed 150 feet. Service conductors shall be so installed as not to obstruct the climbing space. There shall be not more than one splice per service conductor in any span, and splicing sleeves shall be located at least 10 feet from the conductor support.

Conductors shall be sagged in accordance with instructions which shall be furnished to the Contractor by the Engineer.

18. Grounds.

Ground rods shall be driven full length in undisturbed earth in accordance with the Construction Drawings. The top shall be at least 12 inches below the surface of the earth. The ground wire shall be attached to the rod with a clamp and secured to the pole with staples. The staples on the ground wire shall be spaced 2 feet apart except for a distance of 8 feet above the ground and 8 feet down from the top of the pole where they shall be 6 inches apart.

The transformer case, neutral wires, and lightning-protective equipment shall all be attached to a common ground wire.

19. Miscellaneous.

Sufficient safe, cool, drinking water and an adequate first-aid kit must be provided on every work truck. Adequate safety equipment and construction tools for the workmen shall be provided by the Contractor.

INDEX OF CONSTRUCTION DRAWINGS

Construction Drawings

Single-Phase, Two-Wire:

A1	Vertical construction--0° to 5° angle, single primary support
A1-1	Vertical construction--0° to 5° angle, double primary support
A1-2	Vertical construction--0° to 5° angle, double primary and neutral supports
A2	Vertical construction--5° to 30° angle
A2-3	Vertical construction--5° to 30° angle, double primary and neutral supports
A3	Vertical construction--30° to 60° angle
A4	Vertical construction--60° to 90° angle
A5	Vertical construction--deadend (single)
A5-1, A5-2	Vertical construction--single phase tap
A5-3	Vertical construction--single phase tap
A5-4, A5-4A	Vertical construction--single phase tap, 0° to 60° angle
A6	Vertical construction--deadend (double)
A7	Crossarm construction--deadend (single)
A8	Crossarm construction--deadend (double)
A9	Crossarm construction--double line arm
A9-1	Crossarm construction--single line arm
A20	Crossarm construction--single phase tap at 0° to 5° angle
A22	Crossarm construction--single phase junction at 0° to 5° angle

V-Phase, Two Wires and Neutral:

B1	Crossarm construction--0° to 5° angle, single primary support
B1-1	Crossarm construction--0° to 5° angle, double primary support
B2	Crossarm construction--5° to 30° angle
B3	Vertical construction--30° to 60° angle
B4	Vertical construction--60° to 90° angle
B4-1	Vertical construction--60° to 90° angle
B5, B5-1	Vertical construction--deadend (single)
B7, B7-1	Crossarm construction--deadend (single)
B8	Crossarm construction--deadend (double)
B9	Crossarm construction--double line arm
B9-1	Crossarm construction--single line arm
B22	Crossarm construction--single phase junction, at 0° to 5° angle
B41	Crossarm construction--V-phase deadend, 1-phase continuing

Three-Phase, Four-Wire Star:

C1	Crossarm construction--0° to 5° angle, single primary support
C1-1	Crossarm construction--0° to 5° angle, double primary support
C1-2	Crossarm construction--0° to 2° angle, single primary support (large conductors)
C1-3	Crossarm construction--2° to 5° angle, double primary support (large conductors)
C1-4	Crossarm construction--0° to 2° angle, single primary support (large conductors)
C1-7	Crossarm construction--0° to 5° angle, single primary support, crossarm lowered
C2	Crossarm construction--5° to 30° angle, double primary support, crossarm lowered
C2-1	Crossarm construction--5° to 30° angle
C2-2	Crossarm construction--5° to 30° angle (large conductors)
C3	Vertical construction--30° to 60° angle
C4	Vertical construction--60° to 90° angle
C4-1	Vertical construction--60° to 90° angle
C5, C5-1	Vertical construction--deadend (single)
C7, C7-1	Crossarm construction--deadend (single)
C8	Crossarm construction--deadend (double)
C8-1	Crossarm construction--deadend (double)
C8-2	Crossarm construction--deadend (double) (large conductors)
C8-3	Crossarm construction--deadend (double) (large conductors with unbalanced loads)

Three-Phase, Four-Wire Star (Cont'd.):

C9	Crossarm construction--double line arm
C9-1	Crossarm construction--single line arm
C9-2	Crossarm construction--double line arm (large conductors)
C9-3	Crossarm construction--single line arm (large conductors)
C22	Crossarm construction--single-phase junction at 0° to 5° angle
C23	Crossarm construction--V-phase tap, at 0° to 5° angle
C24	Crossarm construction--V-phase junction at 0° to 5° angle

Three-Phase, Double Circuit:

DC-C1	Crossarm construction--double circuit, single primary support at 0° to 5° angle (2 crossarm type)
DC-C1A	Crossarm construction--double circuit, single primary support at 0° to 5° angle (3 crossarm type)
DC-C1B	Crossarm construction--double circuit, single primary support, overhead neutral at 0° to 5° angle (2 crossarm type)
DC-C1-1A	Crossarm construction--double circuit, double primary support at 0° to 5° angle
DC-C2	Crossarm construction--double circuit, double primary support, 0° to 5° angle (2 crossarm type)
DC-C2-1	Crossarm construction--double circuit, 5° to 30° angle
DC-C3	Vertical construction--double circuit, 30° to 60° angle
DC-C4	Vertical construction--double circuit, 60° to 90° angle
DC-C4A	Crossarm construction--double circuit, 60° to 90° angle
DC-C8	Crossarm construction--double circuit, deadend double
DC-C25	Crossarm construction--double circuit, 3-phase tap at 0° to 5° angle
DC-C25A	Crossarm construction--double circuit, 3-phase tap at 0° to 5° angle (3 crossarm type)

Guy Assemblies:

E1-1, E1-2, E1-3	Single down guy, through-bolt type
E2-1, E2-2	Single overhead guy, through-bolt type
E3-2, E3-3, E3-10	Single down guy, wrapped type, Guy Guard
E4-2, E4-3	Single overhead guy, wrapped type
E5-1	Crossarm construction--deadend guy
E6	Double down guy
E7	Three down guys (large conductors)
E11, E12	Single loop guy, wrapped type

Anchor Assemblies:

F1-1, F1-2, F1-3, F1-4	Expanding anchor assembly
F2-1, F2-2, F2-3, F2-4	Log Anchor assembly
F4-1	Screw anchor
F5-1, F5-2	Rock anchor assembly
F6-1, F6-2, F6-3	Swamp anchor assembly

Transformer Assemblies:

G9-1½	Single-phase, 2-wire, neutral grounded--conventional transformer assembly with tank-mounted cut-out and arrester
G9-1½A	Single-phase, 2-wire, neutral grounded--conventional transformer assembly with tank-mounted cut-out and arrester with stand-off pin
G10-1½	Single-phase, 2-wire, neutral grounded--conventional transformer assembly with tank-mounted cut-out and arrester
G10-1½A	Single-phase, 2-wire, neutral grounded--conventional transformer assembly with tank-mounted cut-out and arrester with stand-off pin
G39-1½	Conventional transformer with tank mounted cut-out and lightning arrester on 3-phase line
G65-1½	Single-phase, 2-wire, neutral grounded--conventional transformer with double gap and internal primary fuse at 0° to 5° angle
G65-1½A	Single-phase, 2-wire, neutral grounded--conventional transformer with double gap and internal primary fuse at 0° to 5° angle, with stand-off pin
G66-1½	Single-phase, 2-wire, neutral grounded--conventional transformer with double gap and internal primary fuse at deadend

Transformer Assemblies (Cont'd):

G66-1½A	Single-phase, 2-wire, neutral grounded--conventional transformer with double gap and internal primary fuse at deadend, with stand-off pin
G105-1½	Single-phase, 2-wire, neutral grounded--self-protected transformer at 0° to 5° angle
G105-1½A	Single-phase, 2-wire, neutral grounded--self-protected transformer at 0° to 5° angle, with stand-off pin
G106-1½	Single-phase, 2-wire, neutral grounded--self-protected transformer at deadend
G106-1½A	Single-phase, 2-wire, neutral grounded--self-protected transformer at deadend, with stand-off pin
G126-1½	Single-phase, 2-wire, neutral grounded--self-protected transformer at deadend, secondary continuing
G135-1½	Three-phase, 4-wire, star system--single-phase, self-protected transformer on middle or nearest phase wire
G136-1½	Three-phase, 4-wire, star system--single-phase, self-protected transformer on outer phase wire
G205-5	Three-phase, 4-wire, star system--two conventional transformers (pole mounted)
G215-5	Three-phase, 4-wire, star system--two conventional transformers (pole mounted)
G305-5	Three-phase, 4-wire, star system--three conventional transformers (pole mounted)
G310-5	Three-phase, 4-wire, star system--three conventional transformers, pole mounted, cluster bracket
G315-5	Three-phase, 4-wire, star system--three conventional transformers, crossarm (pole mounted)

Secondary Assemblies:

J5 to J11	Secondary assemblies

Service Assemblies:

K10, K11, K14	Service assemblies, single conductors
K10C, K11C, K14C	Service assemblies, cable
K10CA	Service assemblies, cable
K10L, K11L, K14L	Service assemblies, large conductors
K16C, K17, K17L	Service assemblies, ranch type houses

Miscellaneous Assemblies:

M2-1, M2-11	Grounding assembly--ground rod type
M2-2, M2-12	Pole-protection assembly--butt type (Coil, plate, or rod)
M2-9	Pole-top protection assembly
M3-1, M3-2	Sectionalizing fuse cut-out, single or 3-shot, 1-phase, 2-wire
M3-5T, M3-10T	One sectionalizer or recloser at tap, 1-phase, 2-wire, neutral grounded
M3-7, M3-40	One sectionalizer or recloser in line, 1-phase, 2-wire, neutral grounded
M3-10, M3-41	One sectionalizer or recloser in line, 1-phase, 2-wire, neutral grounded
M3-11	Two reclosers in line, V-phase, 3-wire, neutral grounded
M3-12	Three reclosers in line, 3-phase, 4-wire, neutral grounded, crossarm mounted
M3-12A	Three reclosers in line, 3-phase, 4-wire, neutral grounded, bracket mounted
M3-15	Sectionalizing air break switch
M5-1 to M5-6	Miscellaneous Primary Assemblies

Regulators:

M7-4	Step-voltage regulator assembly--1-phase, 2-wire, neutral grounded, pole mounted on center phase
M7-5	Step-voltage regulator assembly--1-phase, 2-wire, neutral grounded, pole mounted on outside phase.

Capacitor Assemblies:

M9-1	Single-phase capacitor assembly--1-phase, 2-wire neutral grounded
M9-2	V-phase capacitor assembly--2-phase wires and neutral
M9-3	Three-phase capacitor assembly--3-phase, 4-wire star

Guide Drawings:

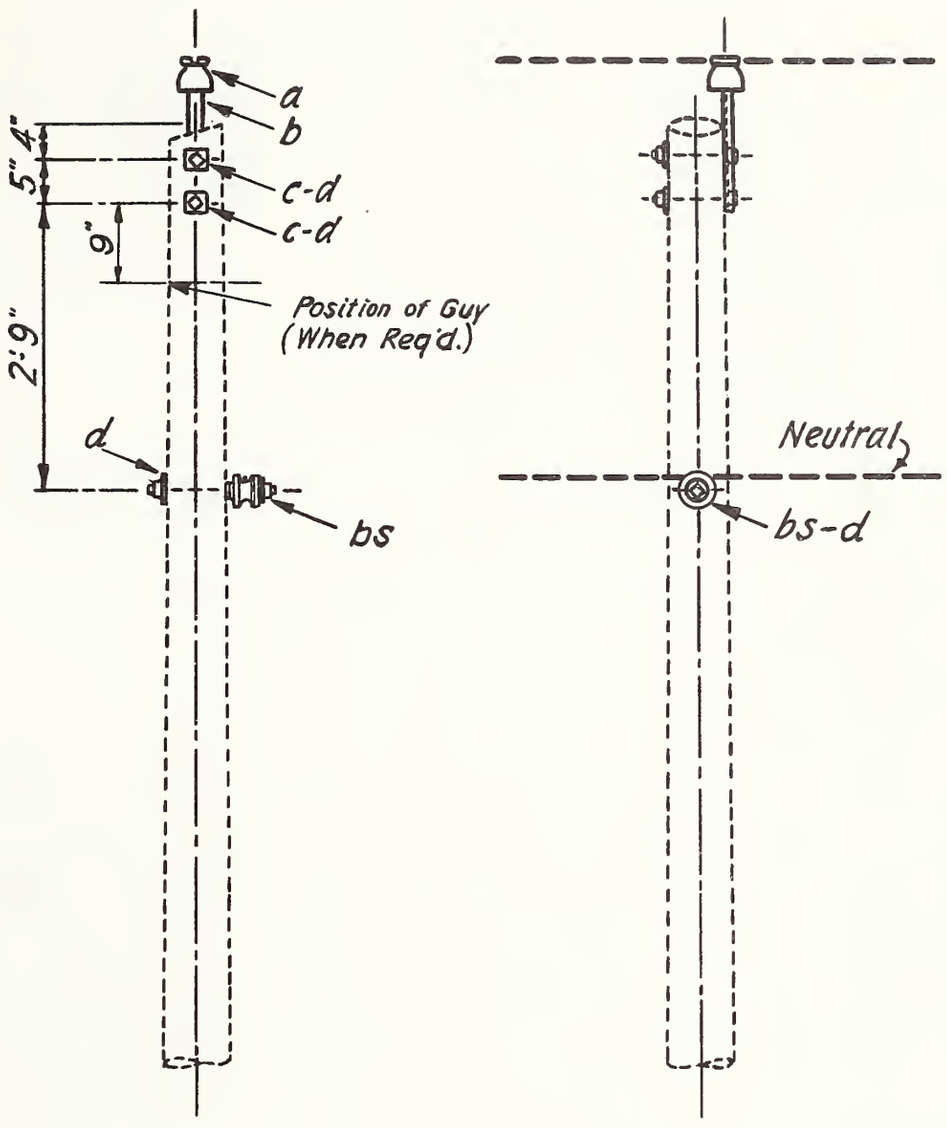
M19	Crossarm drilling guide
M20	Pole framing guide
M21	Crossarm to vertical construction--3-phase, 4-wire star, 30° to 60° angle
M22-1	Tree trimming guide
M22-2	Tree trimming guide
M24-1	Service assembly guide
M24-2	Special service assembly guide
M24-3	Service assembly guide
M24-10	Assembly guide to service mast for ranch type house
M25-1	Secondary assembly guide--angles 0° to 90°
M25-2	Secondary assembly guide--deadends, taps, and junctions
M26-1	Secondary take-off guide--for transformer at deadend
M26-2	Take-off guide--secondaries and services at transformer, 0° to 5° angle
M26-3	Yard pole connection guide
M27-1	Secondary connection guide--transformers at 0° to 5° angle
M27-2	Secondary connection guide--for transformers at secondary deadend
M27-3	Service connection guide--for transformer at deadend
M28	Service or secondary connection guide--for transformer at deadend
M28-1	Service or secondary connection guide--conventional transformer
M29-1	Tap assembly guide
M29-2	Tap assembly guide
M30-1	Guide drawing for groundwire above neutral on guyed poles
M30-2	Guide drawing for groundwire above neutral on poles with butt wrapped or driven grounds
M40-1	Tying guide, single insulator, copper and copperweld copper
M40-1A	Tying guide, single insulator, 1 piece tie, copper type conductor with preformed armor rods
M40-1A2	Tying guide, single insulator, 2 piece tie, copper type conductors with preformed armor rods
M40-2	Tying guide, single insulator, 2 piece steel wire tie, ACSR conductor, aluminum alloy, straight or preformed armor rods
M40-6	Hot line tying guide, single insulator, 2 piece steel wire tie, ACSR conductor, aluminum alloy, straight or preformed armor rods
M40-7	Tying guide, double insulator copper type conductors
M40-8	Hot line tying guide, copper type conductors with preformed rods
M40-10	Tying guide, single insulator, aluminum and aluminum alloy tie wire, ACSR conductor. Aluminum alloy, straight or preformed armor rods.
M40-11	Armor rods, ACSR conductor
M40-12	Preformed armor rods, ACSR conductor
M40-13	Preformed armor rods. Copper type conductor.
M40-17	Tying guide, double insulator, aluminum alloy tie wire, ACSR conductor, aluminum alloy, straight or preformed rods
M41-1	Angle assembly guide, vertical const. 30° to 60° angle copper type conductors, with or without preformed armor rods
M41-10	Angle assembly guide, vertical const. 30° to 60° angle, ACSR conductor with straight or preformed armor rods
M42-3	Deadend assembly guide--deadend clamp method, copperweld copper and stranded copper conductors
M42-4	Deadend assembly guide, solid copper conductor #4 and #6
M42-10	" " " ACSR conductors
M42-11	" " " Deadend clamp method ACSR conductors
M42-13	" " " Large conductors
M42-21	" " " Compression method copper type conductors
M43-3	Tap assembly guide, solid copper conductors
M43-4	" " " copperweld copper and stranded copper conductors
M43-10	" " " ACSR conductors
M45-1	Splicing guide, oval tube type, copper and copperweld copper
M45-10	" " ACSR conductor
M45-20	" " compression type, copper type conductors
M45-21	" " " " ACSR conductor
M45-22	" " " " large ACSR conductor
M52-1, M52-2, M52-3	Pole numbering and marking
R1	Clearing right-of-way guide.

Special Drawings as follows:

PART IV. PLANS

The Construction Plans for this Project are attached and described as follows:

Add Ground Assembly As Required



ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	1	Insulator, pin type		d	3	Washer, 2¼" x 2¼" x 3/16", 13/16" hole	
b	1	Pin, pole top, 15"		bs	1	Bolt, single upset, insulated	
c	2	Bolt, machine, 5/8" x req'd. length					

CONDUCTOR SEPARATIONS
DIMENSIONS
ARE MINIMUM

7.2/12.5 K.V. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
VERTICAL CONSTR. - 0° TO 5° ANGLE, SINGLE PRIMARY SUPPORT

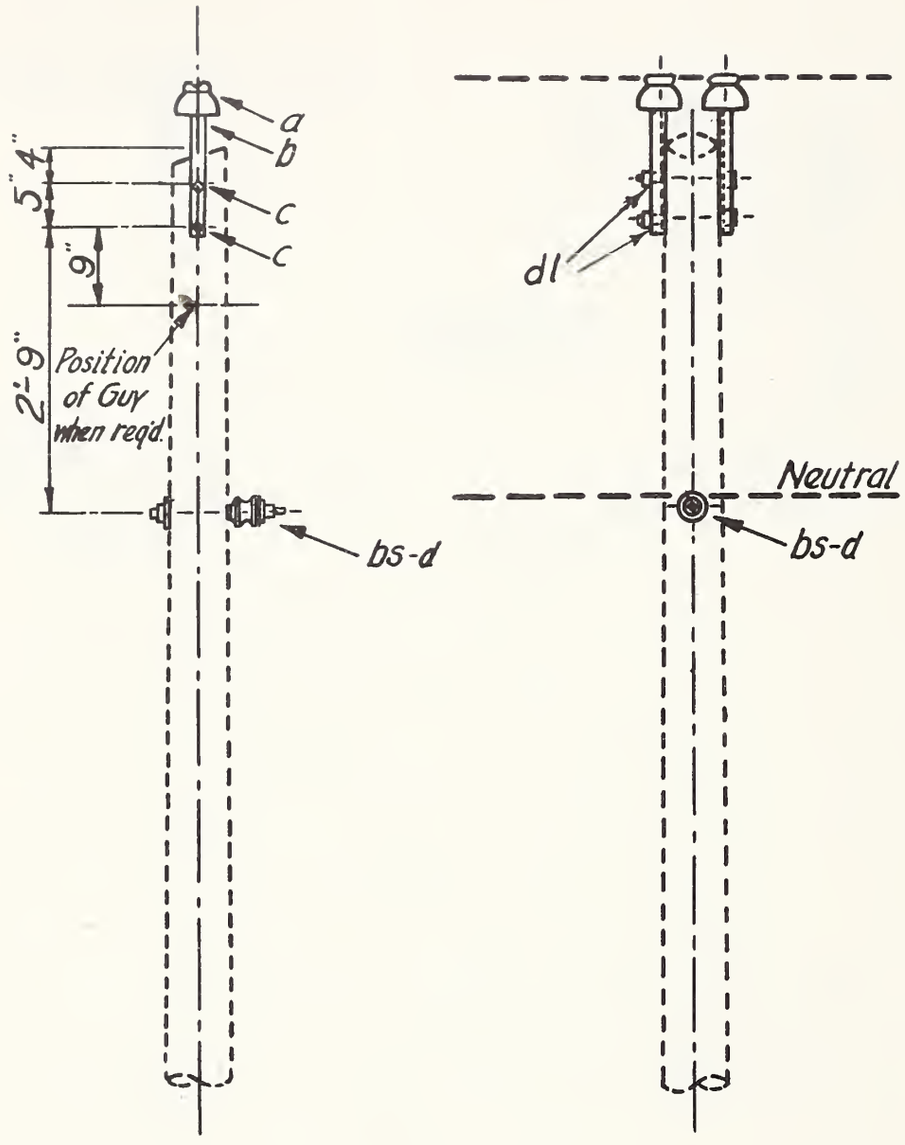
NO.	REVISION	DATE:
1	Reissued	8-56

Scale: ½" = 1'-0"

Date:

A1

Add Ground Assembly As Required



ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	2	Insulator, pin type		d	1	Washer, 2¼" × 2¼" × 3/16", 13/16" hole	
b	2	Pin, pole top, 15"		bs	1	Bolt, single upset, insulated	
c	2	Bolt, machine, 5/8" × req'd. length		dl	2	Pipe spacer, 3/4" dia. x 1 1/2"	

7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
VERTICAL CONSTR.-0° TO 5° ANGLE, DOUBLE PRIMARY SUPPORT

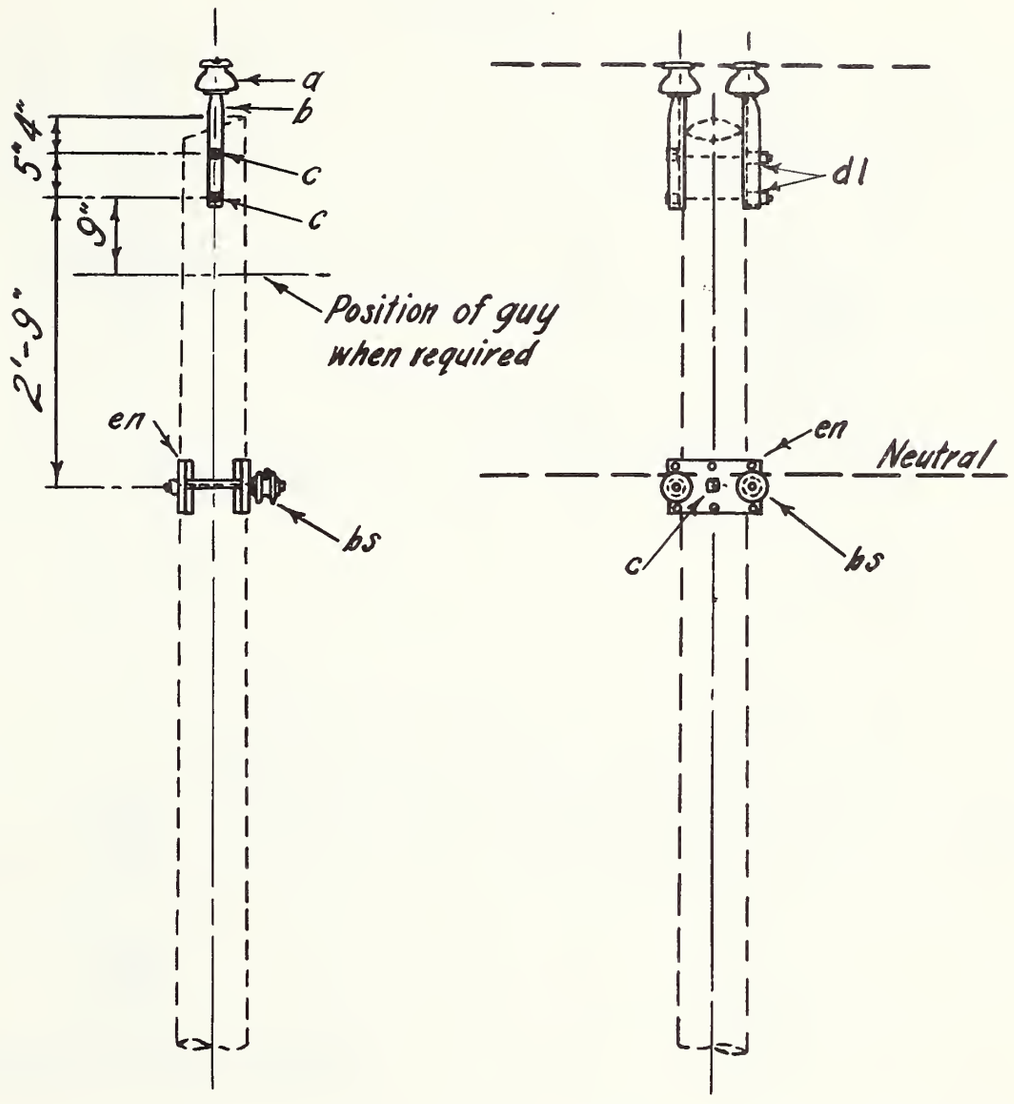
NO.	REVISION	DATE:
1	Reissued	8-56

Scale: ½" = 1'-0"

Date:

A1-1

Add Ground Assembly As Required



ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
a	2	Insulator, pin type		bs	2	Bolt, single upset, insulated	
b	2	Pin, pole top, 15"		en	2	Plate, double support	
c	3	Bolt, machine, 5/8" x req'd. length		dl	2	Pipe spacer, 3/4" dia. x 1 1/2"	

7.2/12.5 V. PRIMARY, 1-PHASE, 2-WIRE, NEUTRAL GROUNDED
VERTICAL CONSTRUCTION - 0° TO 5° ANGLE
DOUBLE PRIMARY AND NEUTRAL SUPPORTS

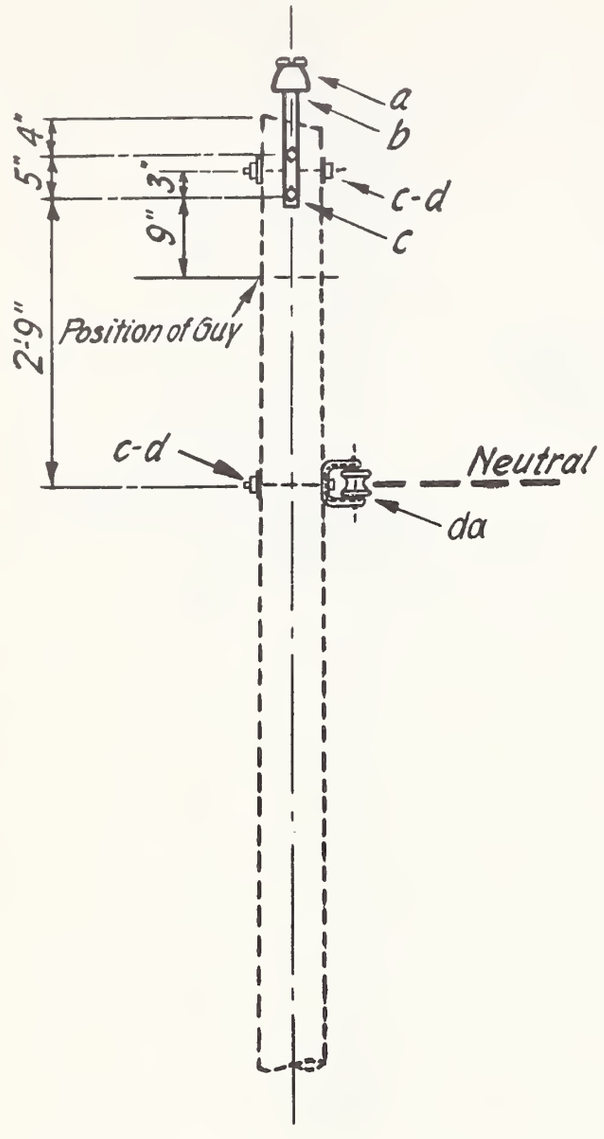
No.	REVISION	Date
1	Reissued	8-56

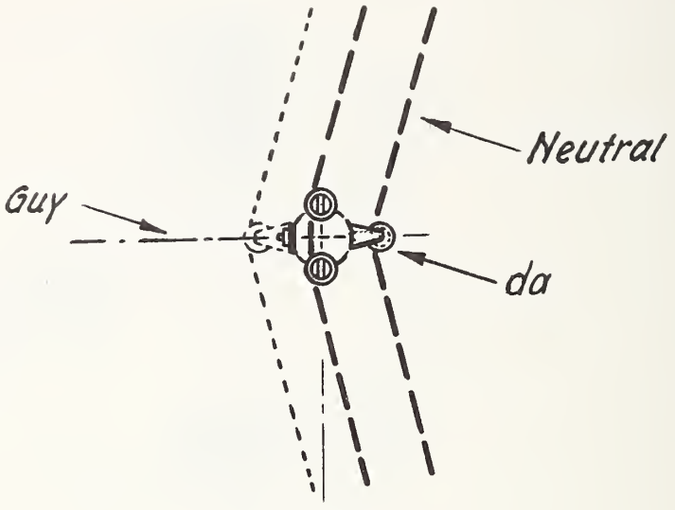
Scale: 1/2" = 1'-0"

Date: Jan. 1, 1949

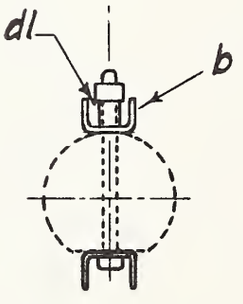
A1-2

Add Ground Assembly As Required





PLAN



POLE TOP PIN ASSEMBLY

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	2	Insulator, pin type		da	1	Bracket, insulated	
b	2	Pin, pole top, 15"		dl	2	Pipe spacer, 3/4" dia. x 1 1/2"	
c	4	Bolt, machine, 5/8" x req'd. length					
d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole					

CONDUCTOR SEPARATIONS
DIMENSIONS
ARE MINIMUM

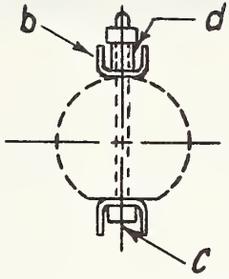
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
VERTICAL CONSTRUCTION — 5° TO 30° ANGLE

No.	REVISION	Date
1	Reissued	8-56

Scale: 1/2" = 1'-0"

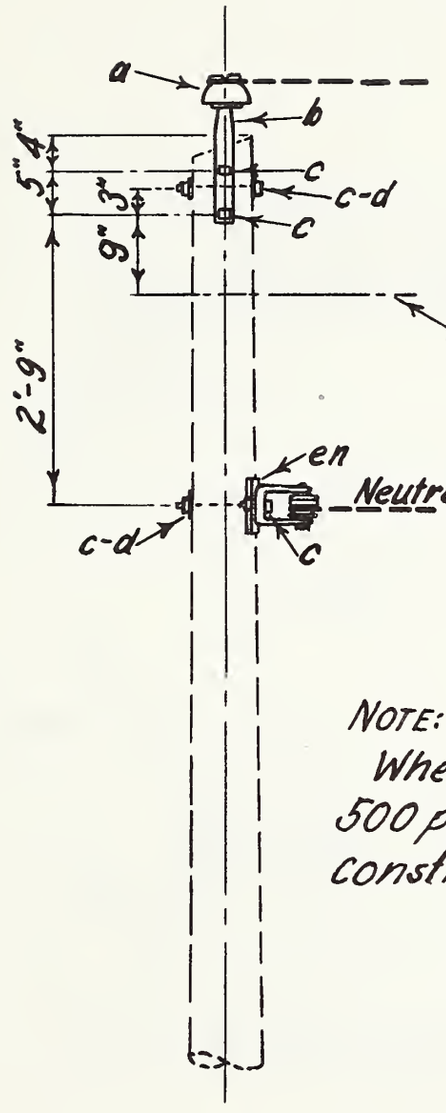
Date:

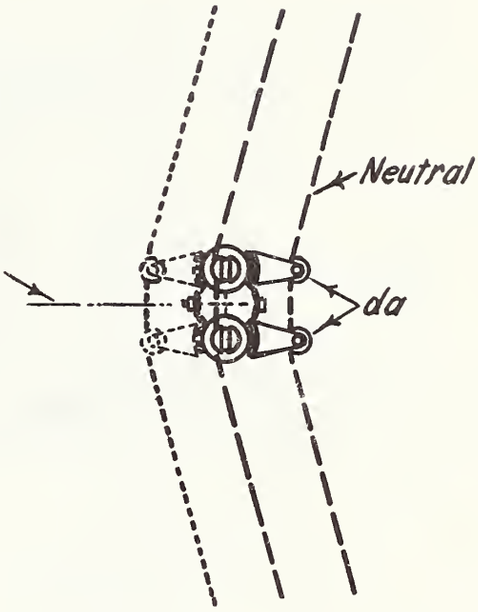
A2



Add Ground Assembly As Required

POLE TOP PIN ASSEMBLY





NOTE:

When the transverse load is more than 500 pounds per pin, substitute crossarm construction similar to C2-1 or C2-2 as reqd.

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
a	2	Insulator, pin type		d	3	Washer, 2¼" x 2¼" x 3/16", 13/16" hole	
b	2	Pin, pole top, 15"		da	2	Bracket, insulated	
c	6	Bolt, machine, 5/8" x req'd. length		en	1	Plate, double support	
				dl	2	Pipe spacer, 3/4" dia. x 1 1/2"	

7.2/12.5 KV. PRIMARY, 1-PHASE, 2-WIRE, NEUTRAL GROUNDED VERTICAL CONSTRUCTION - 5° TO 30° ANGLE DOUBLE PRIMARY AND NEUTRAL SUPPORTS

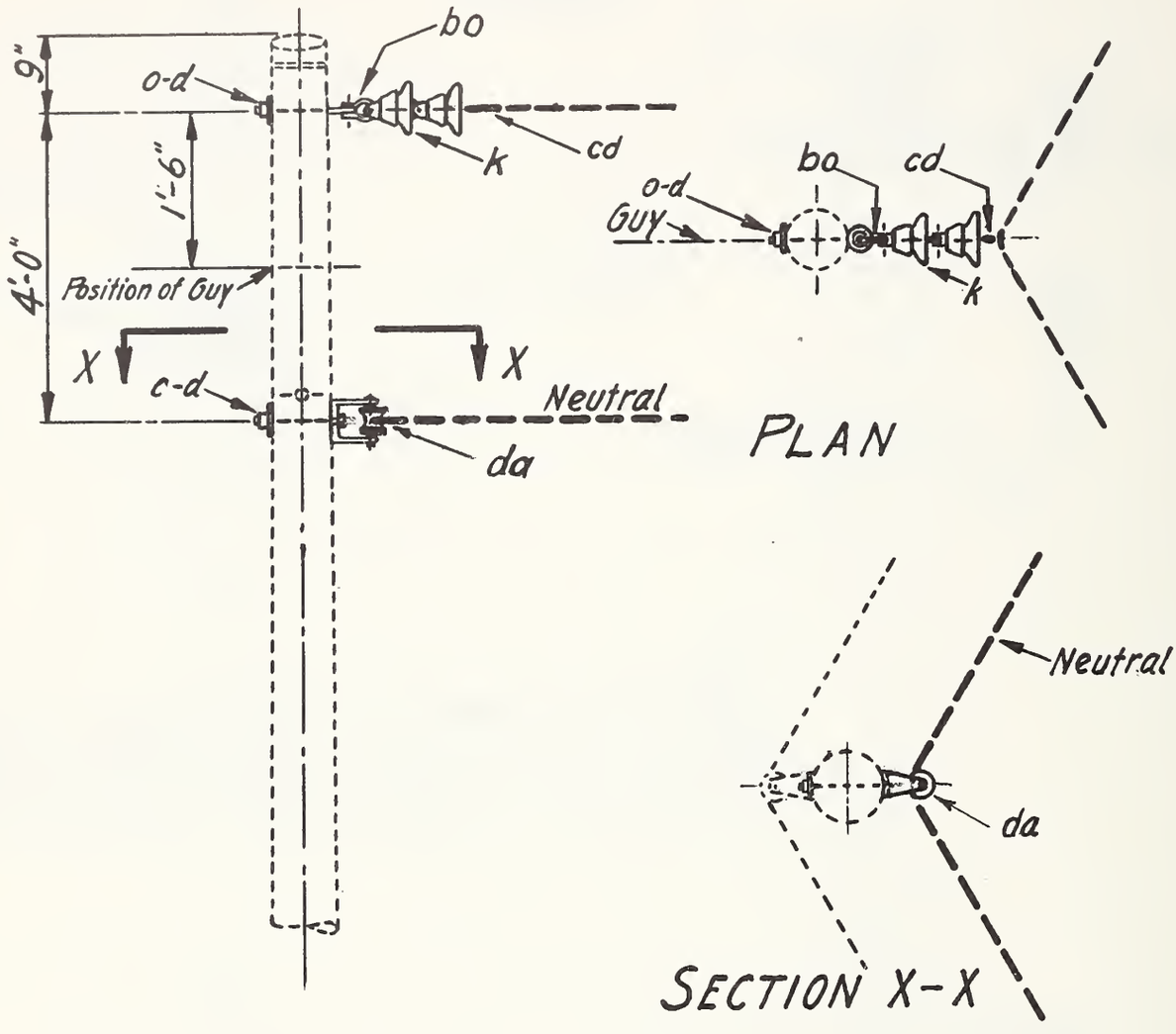
Scale: ½" = 1'-0"

Date: Feb. 15, 1949

A2-3

No.	REVISION	DATE
.1	Reissued	8-56

Add Ground Assembly As Required



ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
d	2	Washer, 2¼"×2¼"×3/16", 13/16" hole		bo	1	Shackle, anchor	
k	2	Insulator, suspension		cd	1	Angle assembly, primary	
o	1	Bolt, eye, 5/8"× req'd. length		da	1	Bracket, insulated	
c	1	Bolt, machine, 5/8"× req'd length					

CONDUCTOR SEPARATIONS
DIMENSIONS
ARE MINIMUM

7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
VERTICAL CONSTRUCTION – 30° TO 60° ANGLE

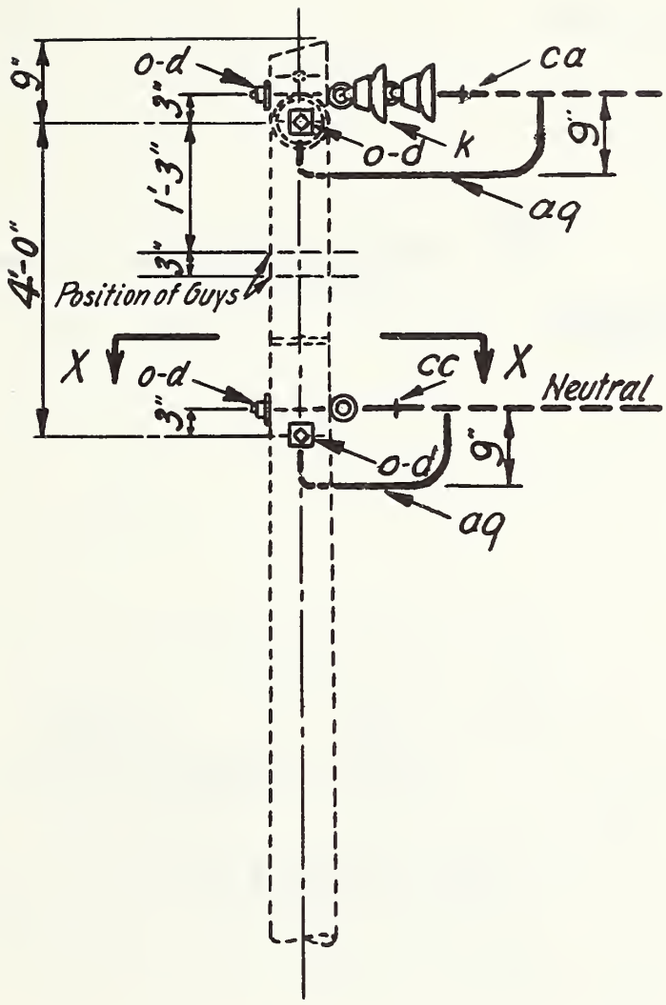
NO.	REVISION	DATE:
1	Reissued	8-56

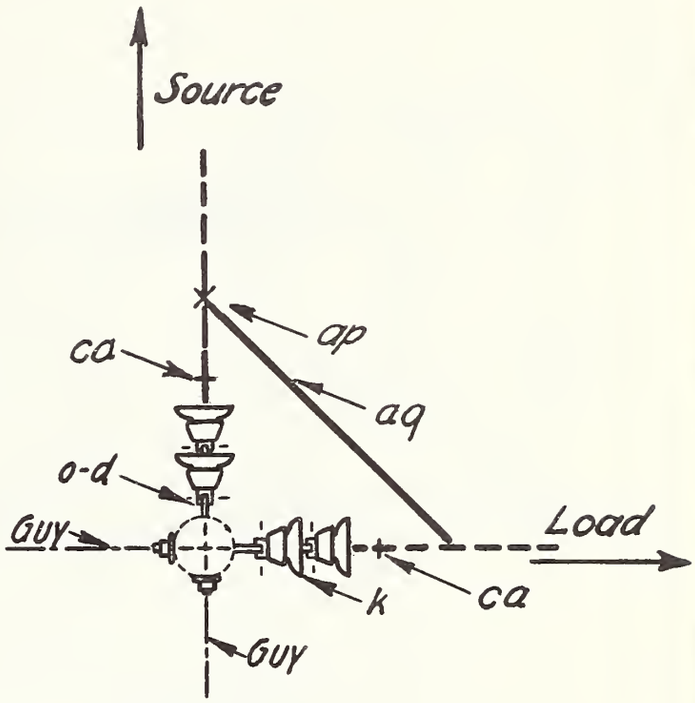
Scale: ½"=1'0"

Date:

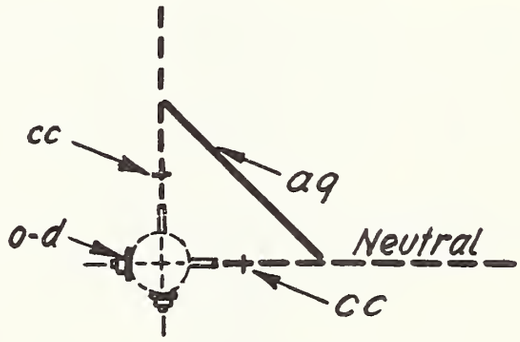
A3

Add Ground Assembly As Required





PLAN



SECTION X-X

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
d	4	Washer, 2¼"×2¼"×3/16", 13/16" hole		o	4	Bolt, eye, 5/8"× req'd. length	
k	4	Insulator, suspension		cc	2	Deadend assembly, neutral	
ca	2	Deadend assembly, primary		aq		Jumpers	
p		Connectors, as req'd.					
ap	1	Clamp, hot line, tap assembly					

CONDUCTOR SEPARATIONS
DIMENSIONS
ARE MINIMUM

NO.	REVISION	DATE:
1	Reissued	8-56

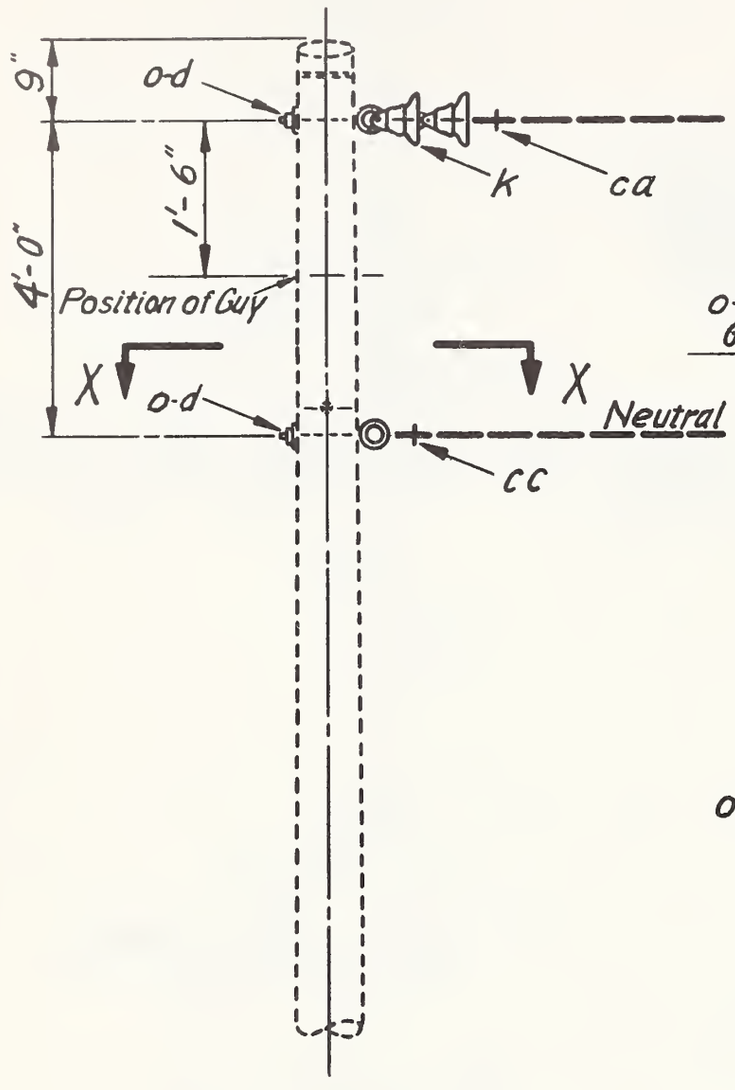
KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED VERTICAL CONSTRUCTION - 60° TO 90° ANGLE

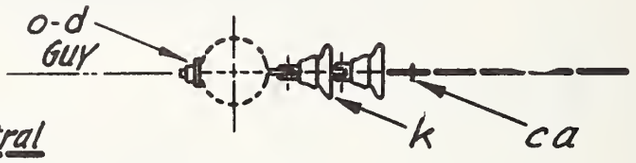
Scale: ½"=1'0"

Date:

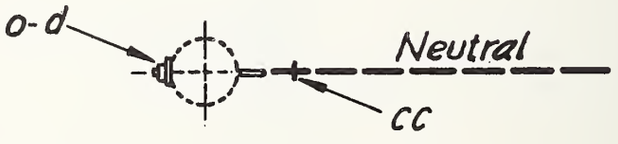
A4

Add Ground Assembly As Required





PLAN



SECTION X-X

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
d	2	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		cc	1	Deadend assembly, neutral	
k	2	Insulator, suspension					
o	2	Bolt, eye, 5/8" x req'd. length					
ca	1	Deadend assembly, primary					

CONDUCTOR SEPARATIONS
DIMENSIONS
ARE MINIMUM

7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
VERTICAL CONSTRUCTION - DEAD END (SINGLE)

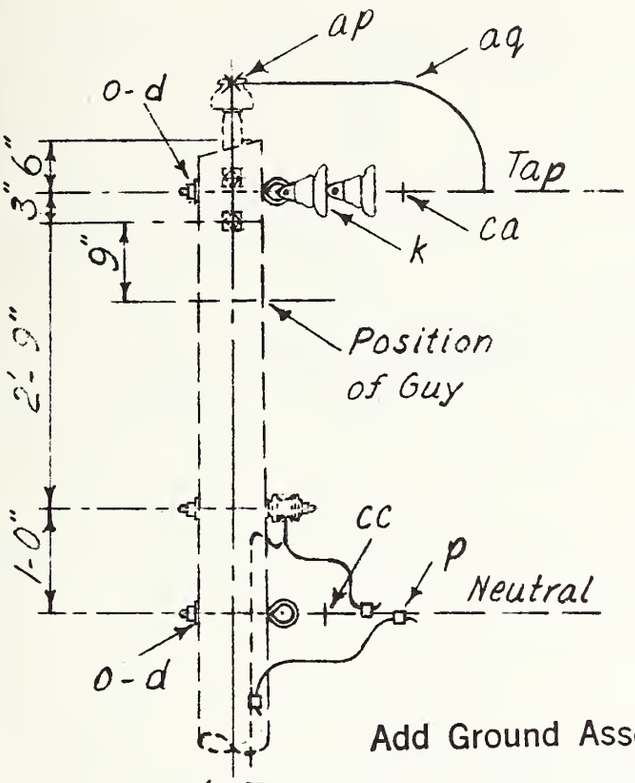
NO.	REVISION	DATE:
1	Reissued	8-56

Scale: 1½" = 1'0"

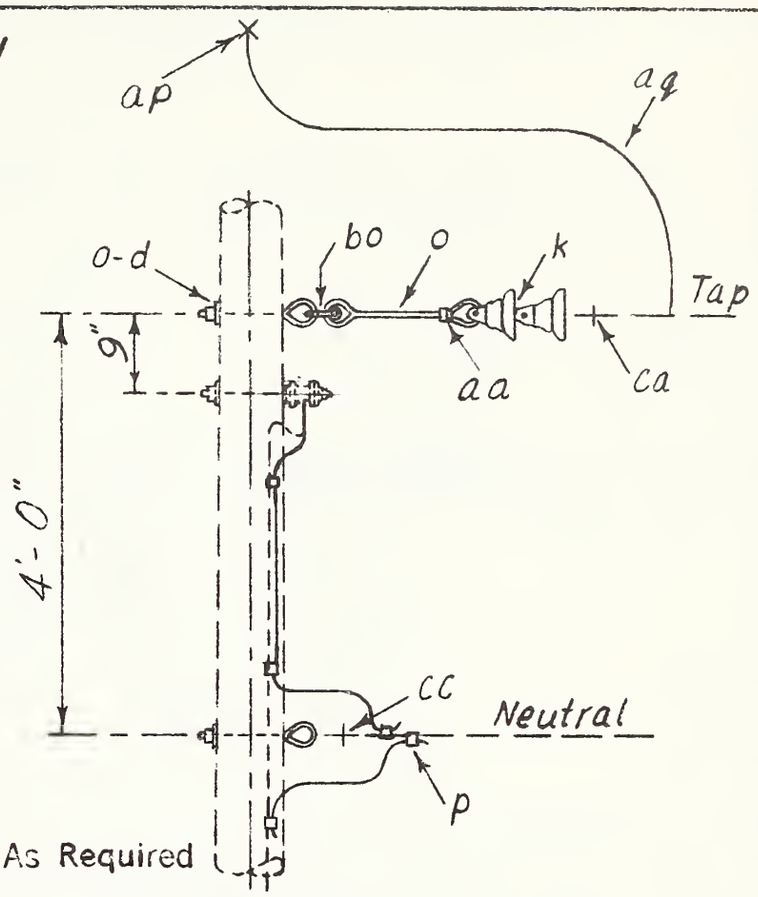
Date: Jan. 15, 1948

A5

Note: See guide drawings M29-1 and M29-2.



A5-1



A5-2

Add Ground Assembly As Required

Notes: A5-1 assembly may be used with the following drawings: A1, A1-1, A1-2, A2, and A2-3

If an additional tap is required in the opposite direction the material items therefore will be the same, except that two eye nuts are substituted for the eye bolts.

Notes: A5-2 assembly may be used with the followings: A1, A1-1 A3, B1, B1-1, B2, B7, C1, C1-2, C1-3, C1-4, C2-1 and C2-2

When used with A3 change 9" dimension to 3'-3".

		ASSEMBLY UNIT	
		A5-1	A5-2
ITEM	MATERIAL	No. REQ'D.	No. REQ'D.
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	2	2
k	Insulator, suspension	2	2
o	Bolt, eye, 5/8" x req'd. length	2	3
p	Connectors, as required		
aa	Nut, eye, 5/8"		1
ap	Clamp, hot line, tap assembly	1	1
aq	Jumpers and leads, as required		
ca	Deadend assembly, primary	1	1
cc	Deadend assembly, neutral	1	1
bo	Shackle, anchor		1

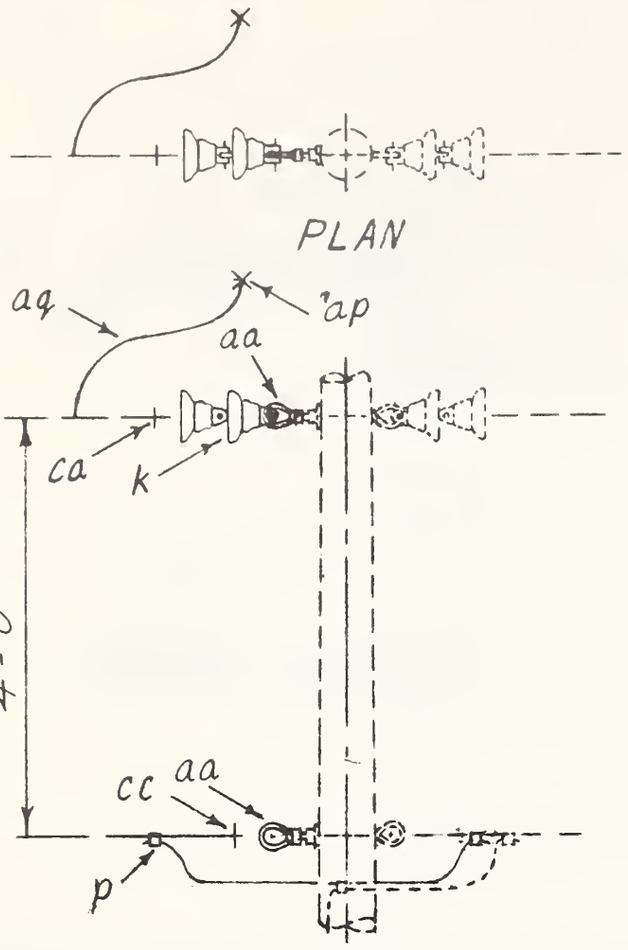
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED VERTICAL CONSTRUCTION - SINGLE PHASE TAP

Scale: 1/2"=1'-0"

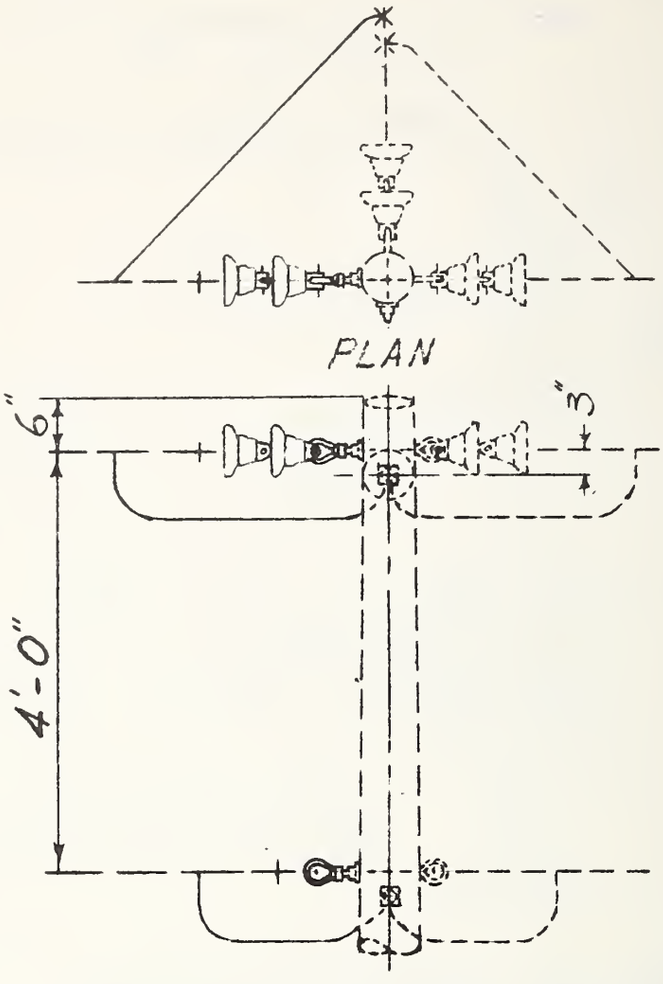
Date: July 12, 1956

A5-1, A5-2

No.	REVISION	Date:



A5-3



DETAIL OF
TYPICAL USE

NOTE:
This assembly may be used with the following drawings: A4, B4, B4-1, C4 and C4-1.
See guide drawings M29-1 and M29-2.

Add Ground Assembly As Required

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
k	2	Insulator, suspension		ca	1	Deadend assembly, primary	
p		Connectors, as required		cc	1	Deadend assembly, neutral	
aa		Nut, eye, 5/8"		aq		Jumpers and leads as required	
ap	1	Clamp, hot line, tap assembly					

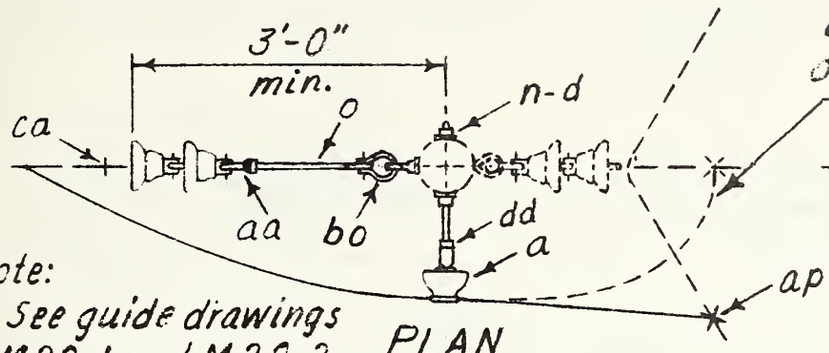
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE NEUTRAL GROUNDED
VERTICAL CONSTRUCTION - SINGLE PHASE TAP

Scale: 1/2"=1'-0"

Date: July 12, 1956

A5-3

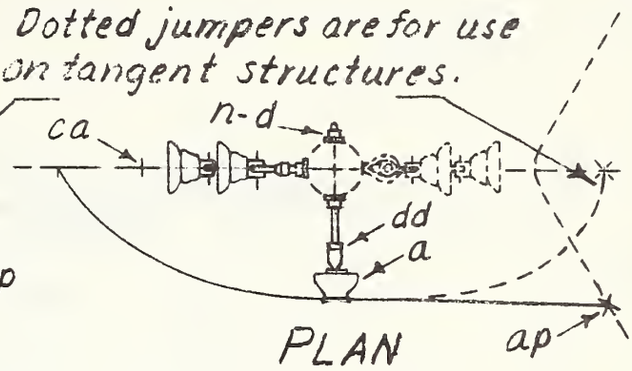
NO.	REVISION	Date



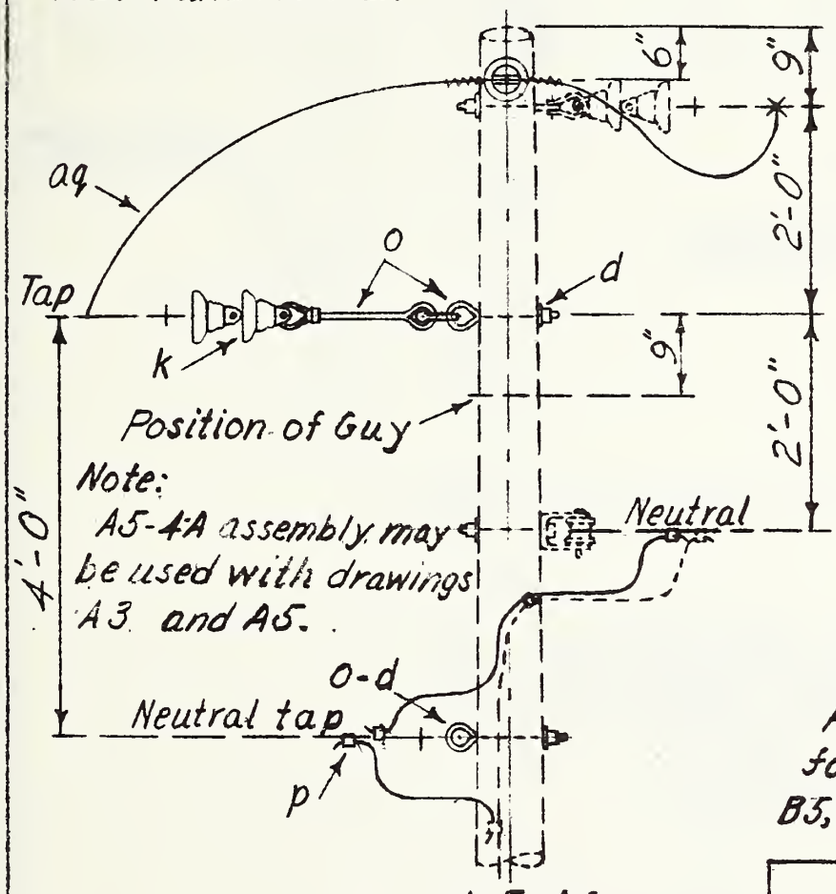
Note:
See guide drawings M29-1 and M29-2.

PLAN

Dotted jumpers are for use on tangent structures.

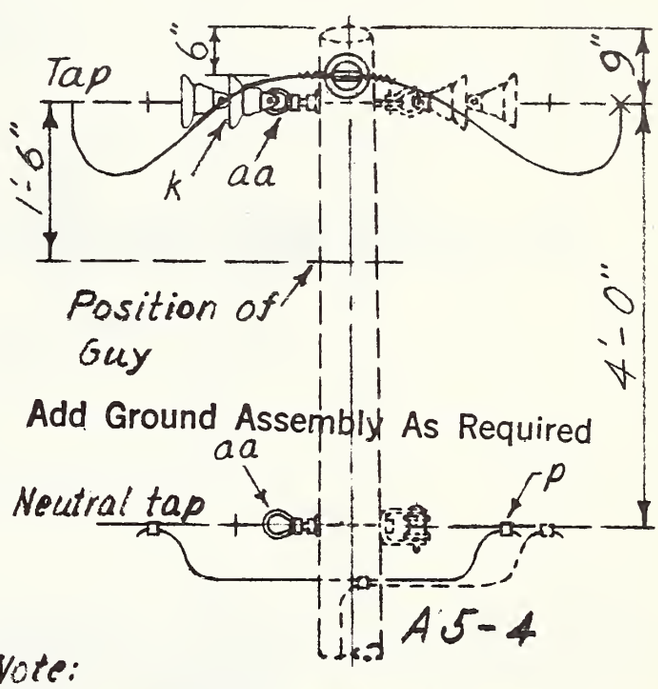


PLAN



Note:
A5-4A assembly may be used with drawings A3 and A5.

A5-4A



A5-4

Note:
A5-4 assembly may be used with the following drawings: A3, A5, B3, B4, B4-1, B5, B5-1, C3, C4, C4-1, C5, and C5-1

ITEM	MATERIAL	ASSEMBLY UNIT A5-4A NO. REQ'D.	ASSEMBLY UNIT A5-4 NO. REQ'D.
a	Insulator, pin type	1	1
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	4	2
k	Insulator, suspension	2	2
n	Bolt, double arming, 5/8" x req'd. length	1	1
o	Bolt eye, 5/8" x req'd. length	3	
p	Connectors, as required		
aa	Nut, eye, 5/8"	1	2
ap	Clamp, hot line, tap assembly	1	1
aq	Jumpers and leads, as required		
bo	Shackle, anchor	1	
ca	Deadend assembly, primary	1	1
cc	Deadend assembly, neutral	1	1
dd	Adapter, insulator	1	1

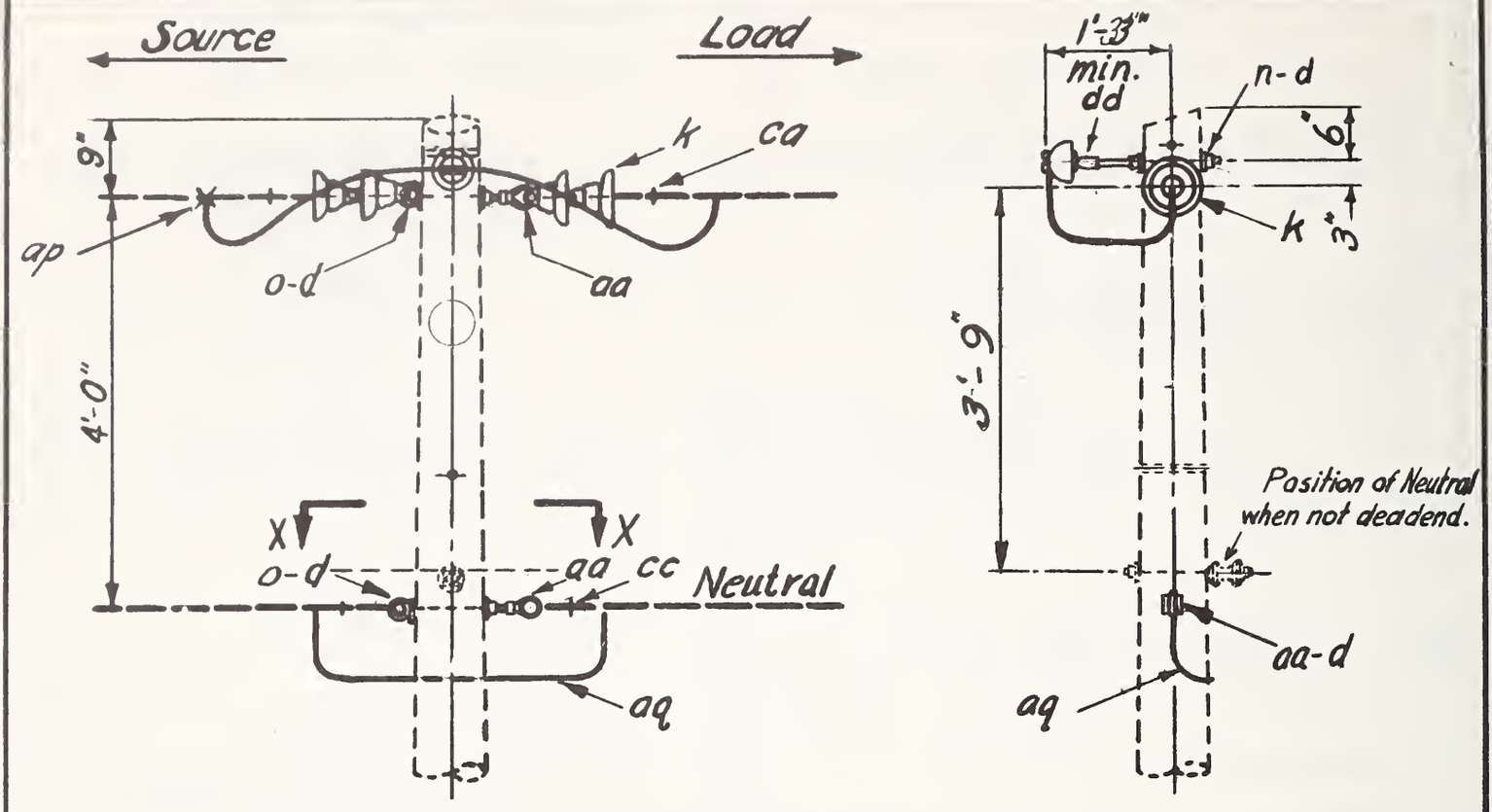
NO.	REVISION	DATE

7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE NEUTRAL GROUNDED VERTICAL CONSTRUCTION - TAP AT 0° TO 60° ANGLE

Scale: 1/2" = 1'-0"

Date: July 12, 1956

A5-4, A5-4A



Add Ground Assembly As Required

SECTION X-X

NOTE:

When the line may be energized from either end, hot line clamps should be installed on both ends of the jumper.

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	1	Insulator, pin type		aa	2	Nut, eye, 5/8"	
d	6	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		aq	2	Jumpers	
k	4	Insulator, suspension		ca	2	Deadend assembly, primary	
n	1	Bolt, double arming, 5/8" x req'd. lgth.		cc	2	Deadend assembly, neutral	
o	2	Bolt, eye, 5/8" x req'd. length		dd	1	Adapter, insulator	
p		Connectors, as req'd.		ap	1	Clamp, hot line, tap assembly	

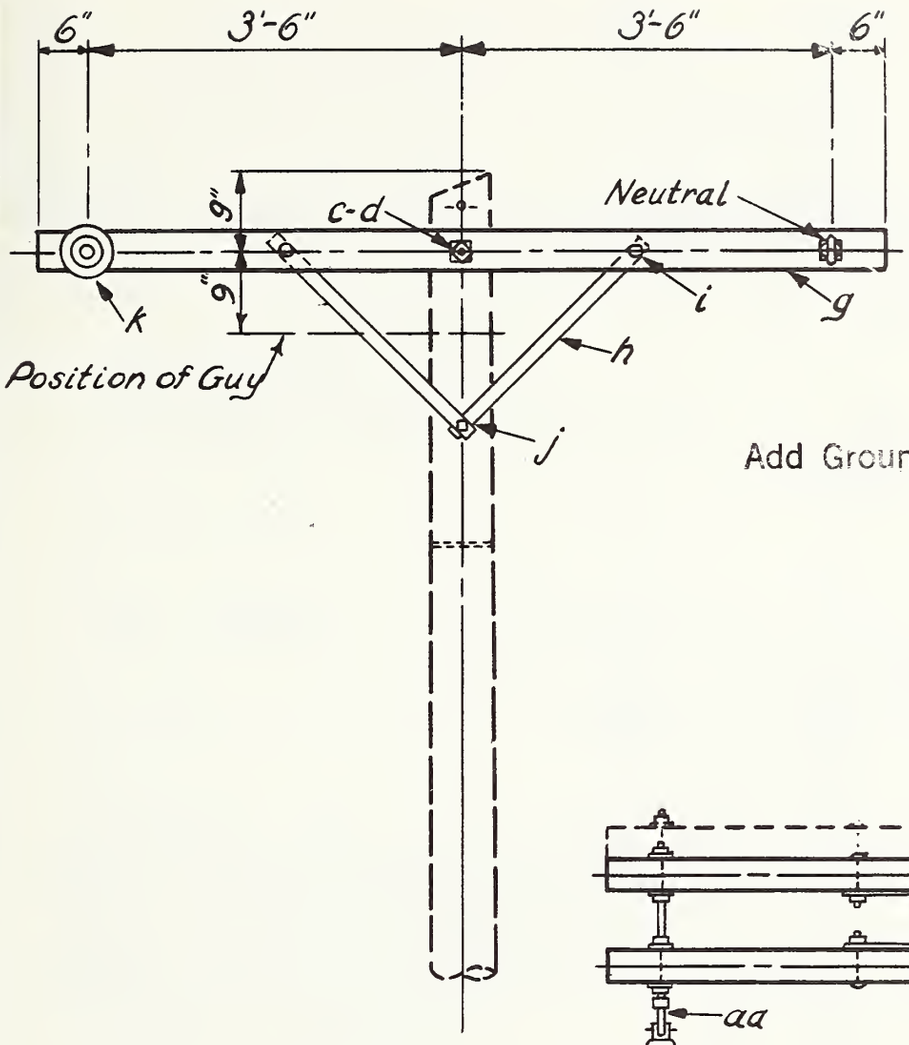
No.	REVISION	DATE
1	Reissued	8-56

7.2/12.5 KV. PRIMARY, 1-PHASE, 2-WIRE, NEUTRAL GROUNDED
VERTICAL CONSTRUCTION - DEADEND (DOUBLE)

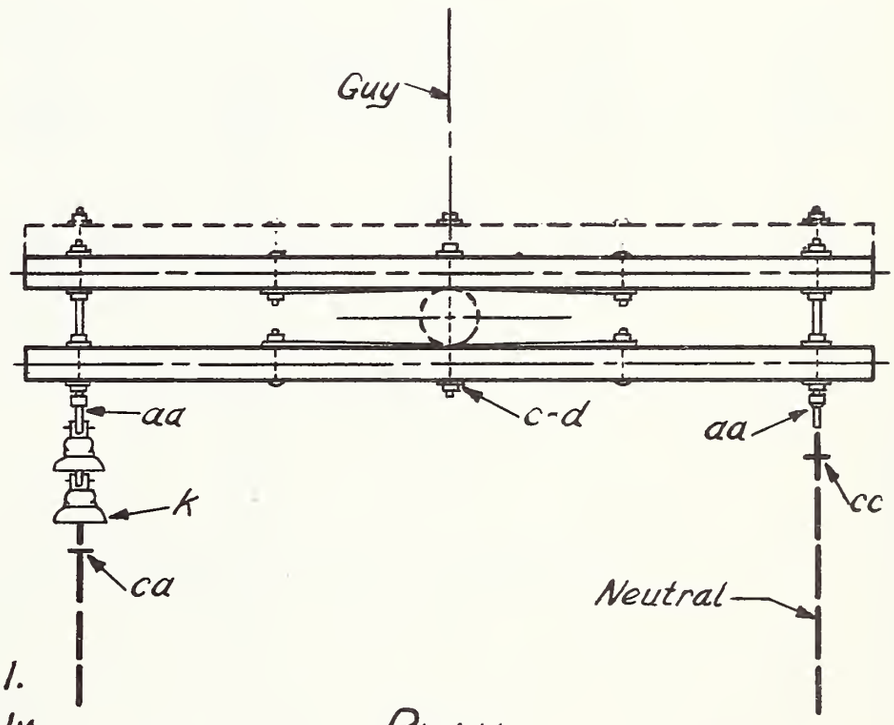
Scale: ½" = 1'-0"

Date:

A6



Add Ground Assembly As Required



PLAN

Notes:

1. *When crossarm guys are required, refer to drawing E5-1.*
2. *Designate as A7-1 for assembly with three crossarms.*

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
c	1	Bolt, machine, 5/8" x req'd. length		k	2	Insulator, suspension	
d	10	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		n	2	Bolt, double arming 5/8" x req'd. l'gth.	
g	2	Crossarm, 3½" x 4½" x 8'-0"		aa	2	Nut, eye, 5/8"	
h	4	Brace, flat, 1¼" x ¼" x 28"		ca	1	Deadend assembly, primary	
i	4	Bolt, carriage, 3/8" x 4½"		cc	1	Deadend assembly, neutral	
j	2	Screw, lag, ½" x 4"					

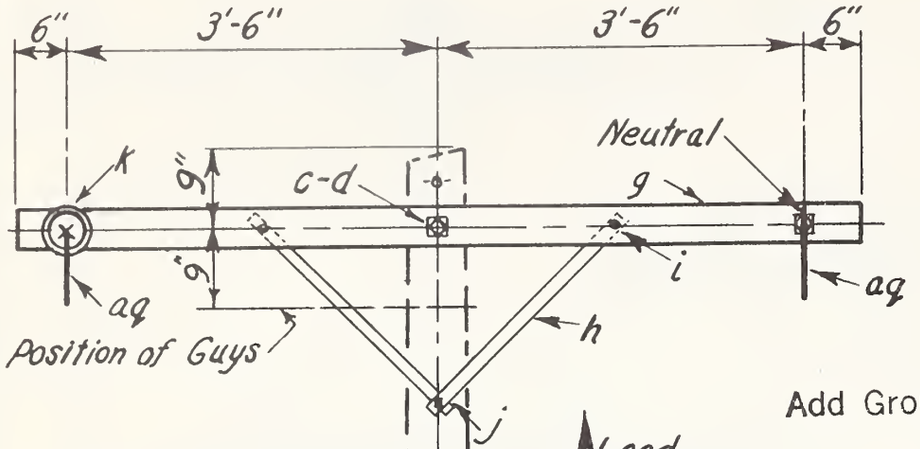
No.	REVISION	DATE
1	Revised	7-19-56

7.2/12.5 KV. PRIMARY, 1-PHASE, 2-WIRE, NEUTRAL GROUNDED
CROSSARM CONSTR. - DEADEND (SINGLE)

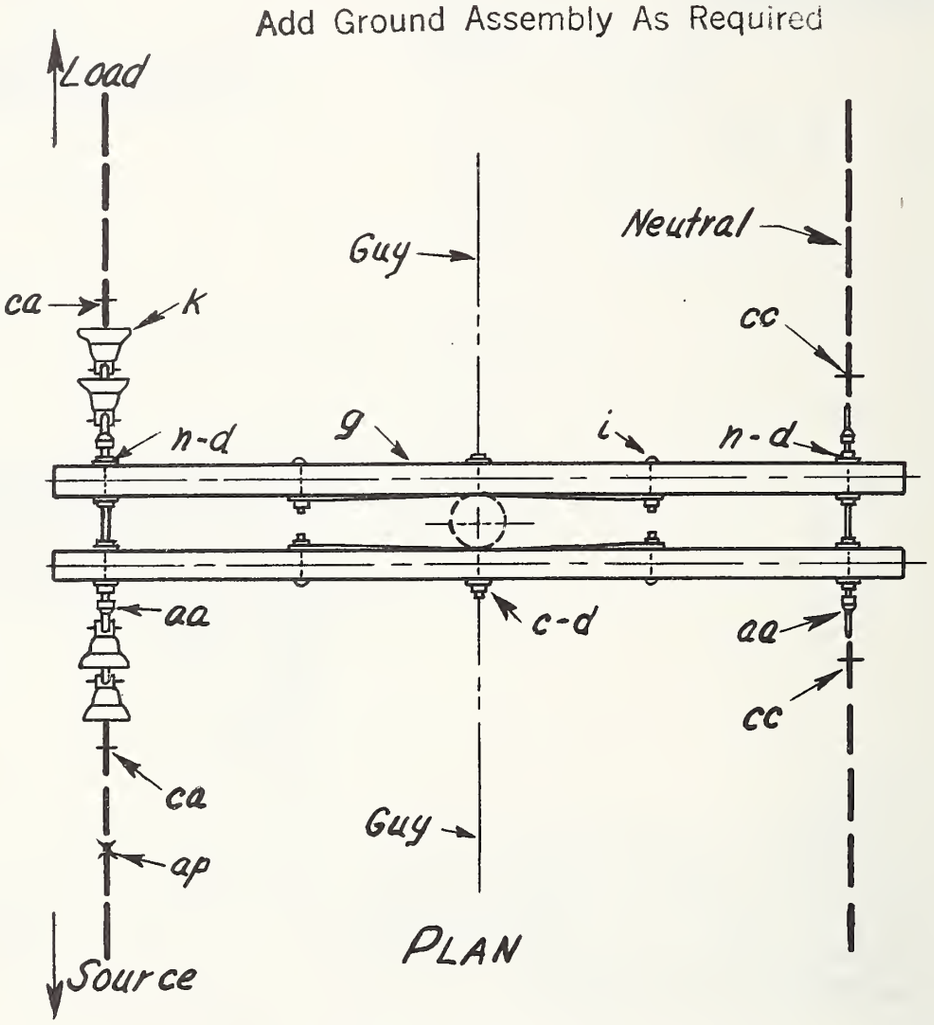
Scale: ½" = 1'-0"

Date: Apr. 12, 1949

A7, A7-1



Add Ground Assembly As Required



PLAN

ITEM	No. Req'd.	MATERIAL		ITEM	No. Req'd.	MATERIAL	
c	1	Bolt, machine, 5/8" x req'd. length		n	2	Bolt, double arming, 5/8" x req'd. lgth.	
d	10	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		p		Connectors, as req'd.	
g	2	Crossarm, 3½" x 4½" x 8'-0"		aa	4	Nut, eye, 5/8"	
h	4	Brace, flat, 1¼" x ¼" x 28"		ap	1	Clamp, hot line	
i	4	Bolt, carriage, 3/8" x 4½"		aq		Jumpers	
j	2	Screw, lag, ½" x 4"		ca	2	Deadend assembly, primary	
k	4	Insulator, suspension		cc	2	Deadend assembly, neutral	

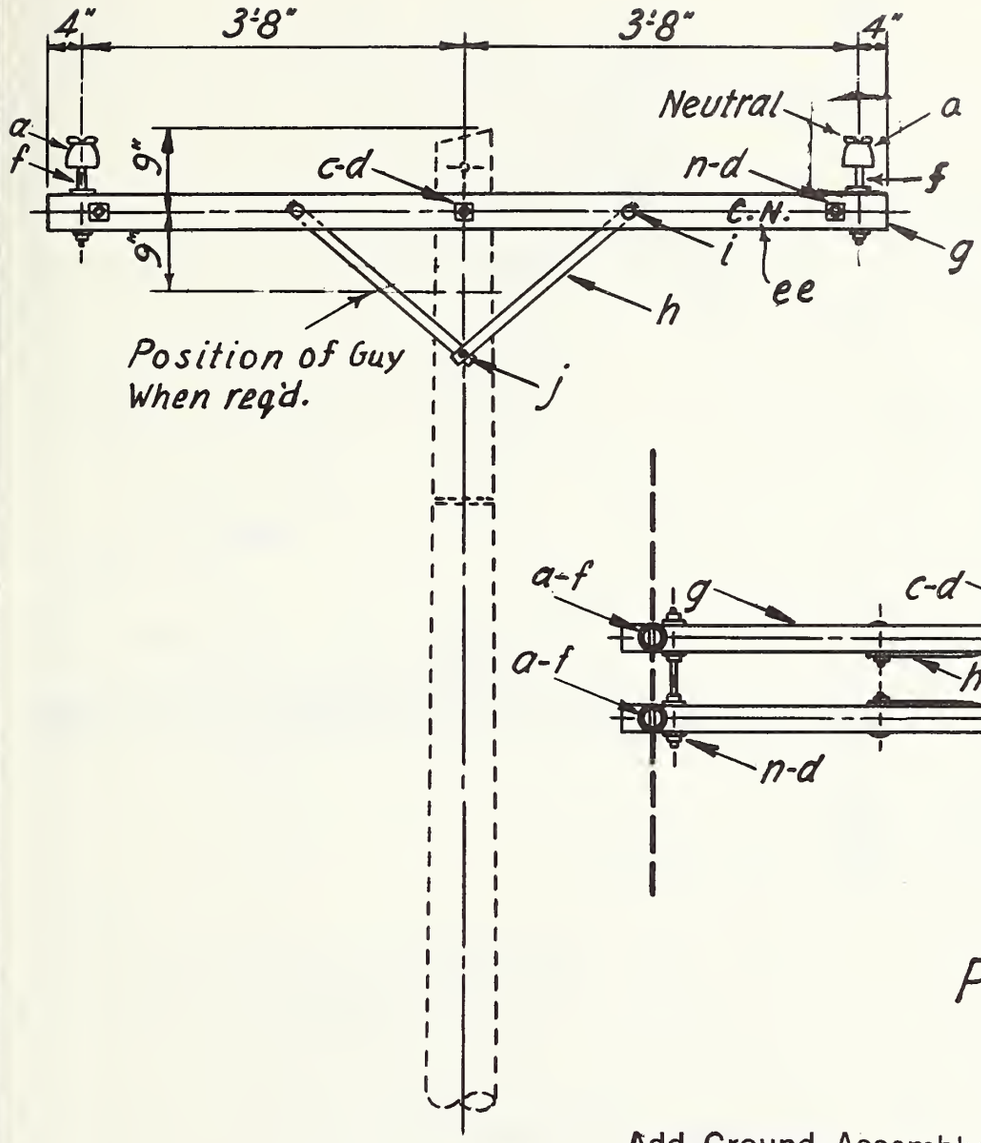
No.	REVISION	DATE
1	Reissued	8-56

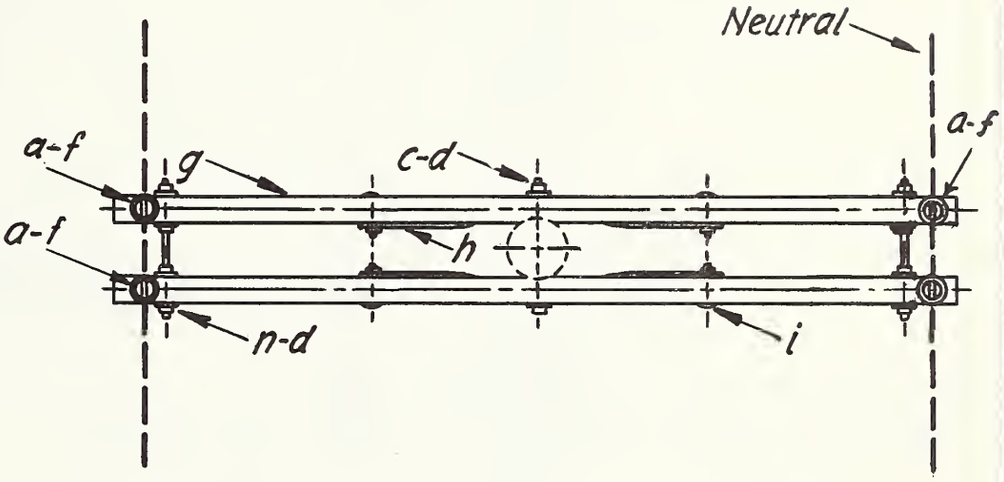
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED CROSSARM CONSTRUCTION – DEADEND (DOUBLE)

Scale: ½" = 1'-0"

Date: Apr. 12, 1949

A 8





PLAN

Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	4	Insulator, pin type		h	4	Brace, 1¼"×¼"×28"	
c	1	Bolt, machine, ⅝"× req'd. length		i	4	Bolt, carriage, ⅜"×4½"	
d	16	Washer, 2¼"×2¼"×3/16", 13/16" hole		j	2	Screw, lag, ½"×4"	
f	4	Pin, crossarm, steel, ⅝"×10¾"		n	2	Bolt, double arming, ⅝"× req'd. length	
g	2	Crossarm, 3½"×4½"×8'-0"		ee	2	Letters "C.N." 2" with 1" nails	

CONDUCTOR SEPARATIONS
DIMENSIONS
ARE MINIMUM

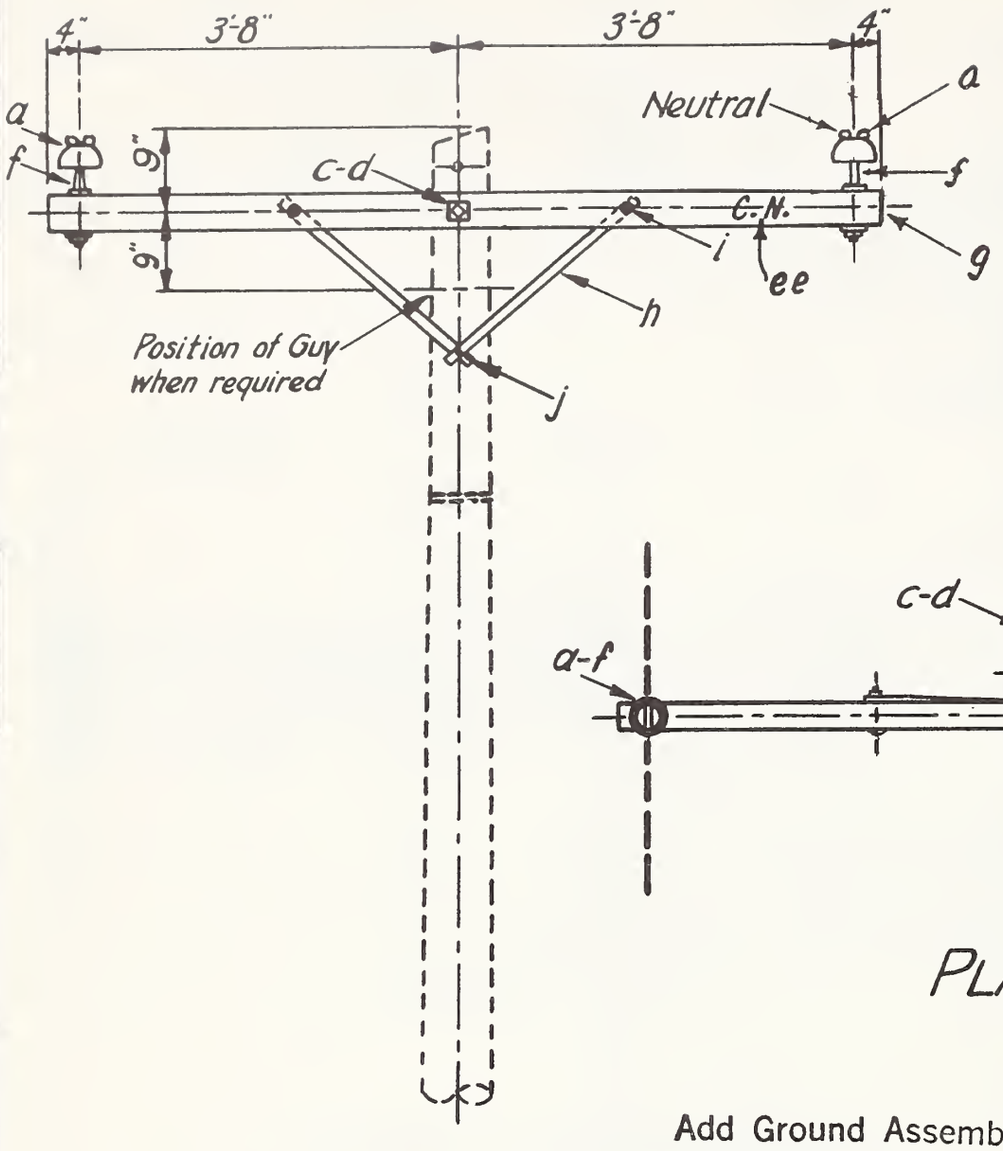
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
CROSSARM CONSTRUCTION – DOUBLE LINE ARM

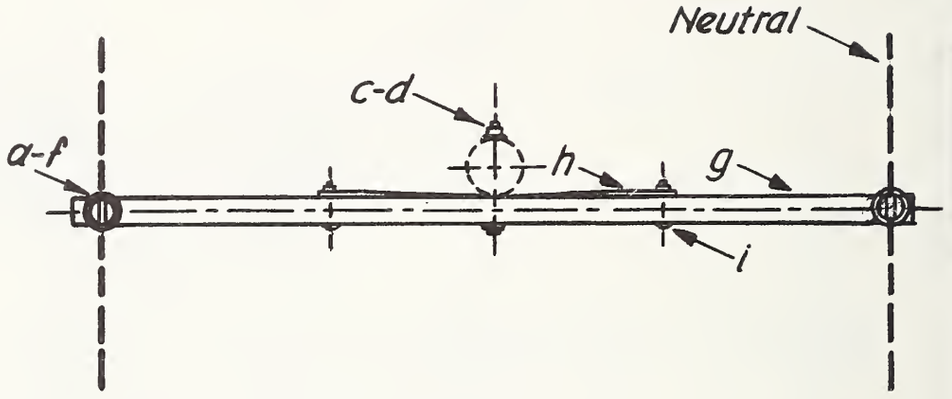
NO.	REVISION	Date:
1	Reissued	8-56

Scale: ½"-1'-0"

Date:

A9





PLAN

Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	2	Insulator, pin type		h	2	Brace, 1¼"×¼"×28"	
c	1	Bolt, machine, ⅝"×req'd. length		i	2	Bolt, carriage, ⅜"×4½"	
d	2	Washer, 2¼"×2¼"×3/16", 13/16" hole		j	1	Screw, lag, ½"×4"	
f	2	Pin, crossarm, steel, ⅝"×10¾"		ee	2	Letters "C.N."; 2" with 1" nails	
g	1	Crossarm, 3½"×4½"×8'-0"					

CONDUCTOR SEPARATIONS
DIMENSIONS
ARE MINIMUM

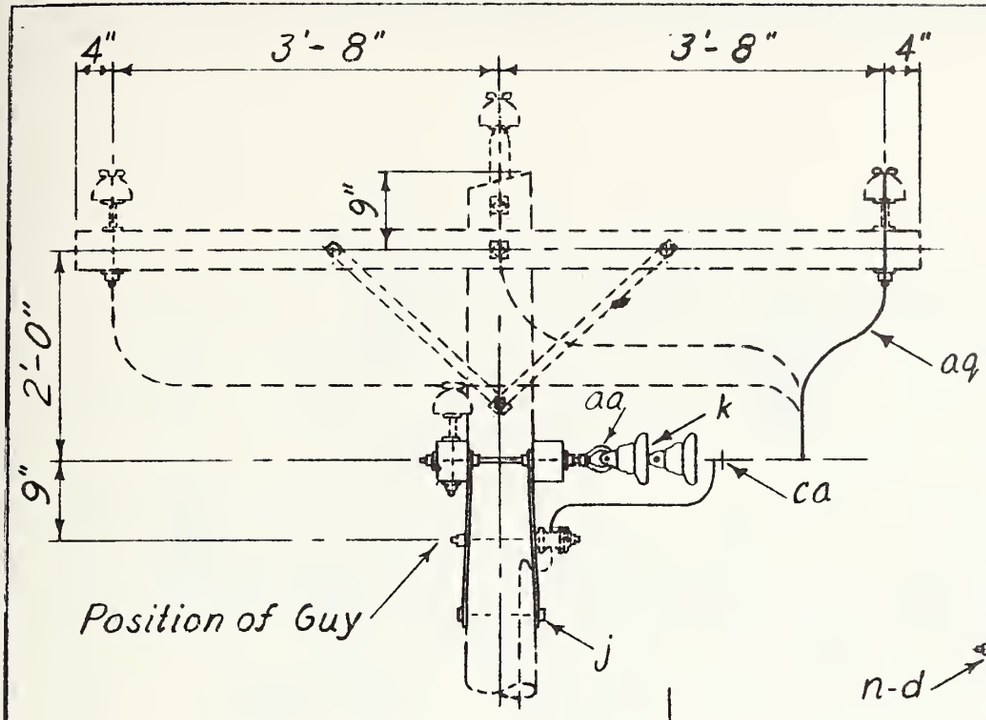
7.2/12.5KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
CROSSARM CONSTRUCTION – SINGLE LINE ARM

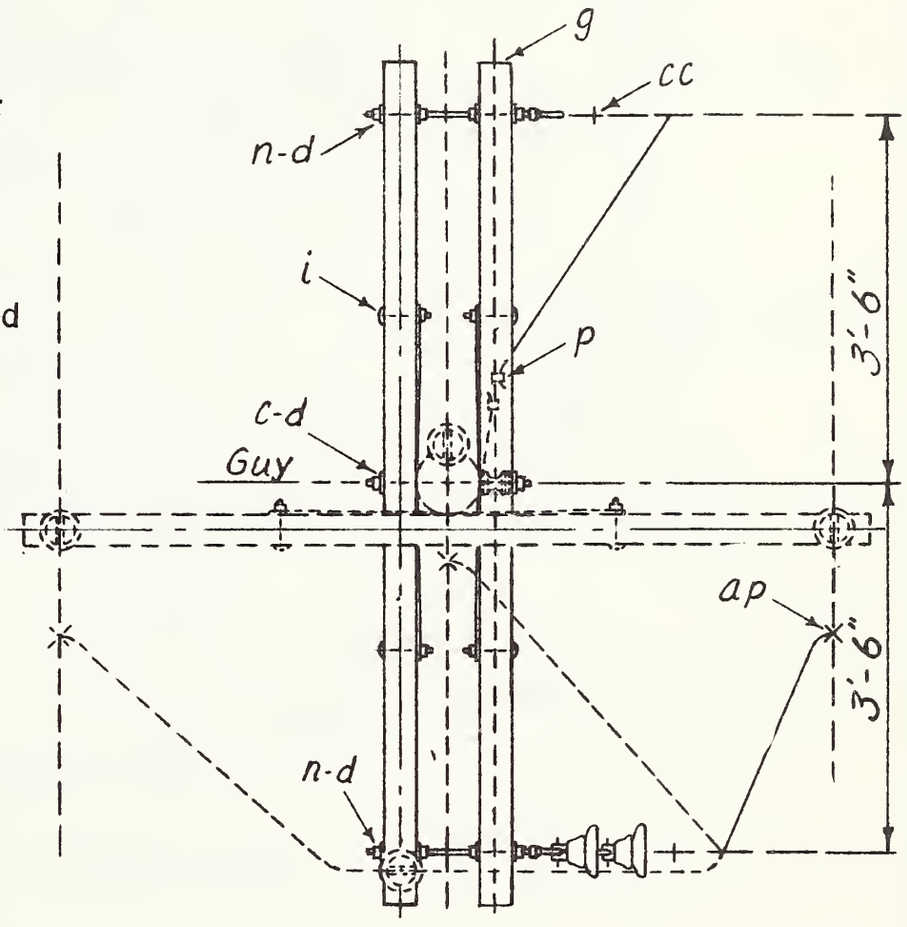
No.	REVISION	Date:
1	Reissued	8-56

Scale: ½"=1'-0"

Date:

A9-1





Add Ground Assembly As Required

Notes:

For connection to opposite phase add assembly M5-5.

For use instead of Vertical Tap where ground clearance is involved.

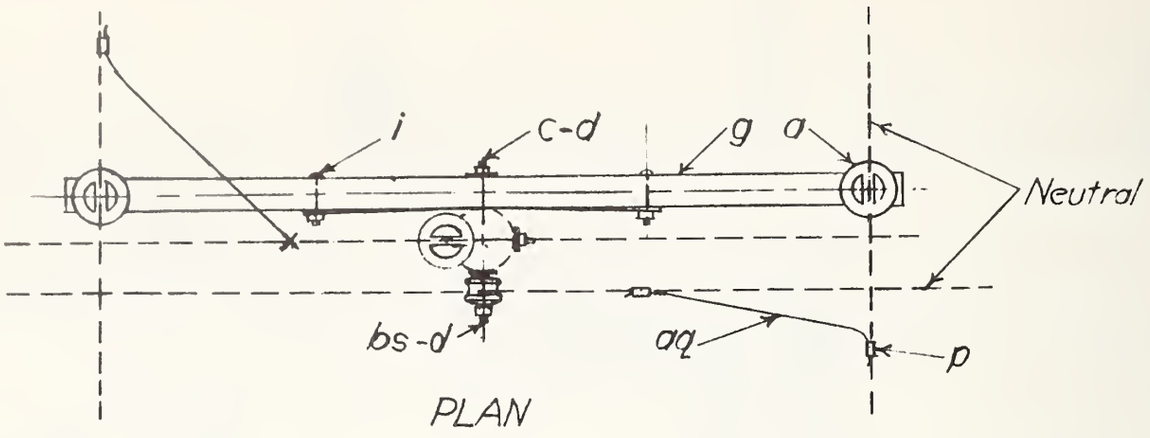
ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
c	1	Bolt, machine, 5/8" x req'd. lg'th.		n	2	Bolt, double arming, 5/8" x req'd. lg'th.	
d	10	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		p		Connectors, as required	
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"		aa	2	Nut, eye, 5/8"	
h	4	Brace, flat, 1 1/4" x 1/4" x 28"		ap	1	Clamp, hot line, tap assembly	
i	4	Bolt, carriage, 3/8" x 4 1/2"		aq		Jumpers or leads as required	
j	2	Screw, lag, 1/2" x 4"		ca	1	Deadend assembly, primary	
k	2	Insulator, suspension		cc	1	Deadend assembly, neutral	

7.2/12.5KV. PRIMARY, 1-PHASE 2-WIRE NEUTRAL GROUNDED
CROSSARM CONSTR., SINGLE PHASE TAP AT 0° TO 5°

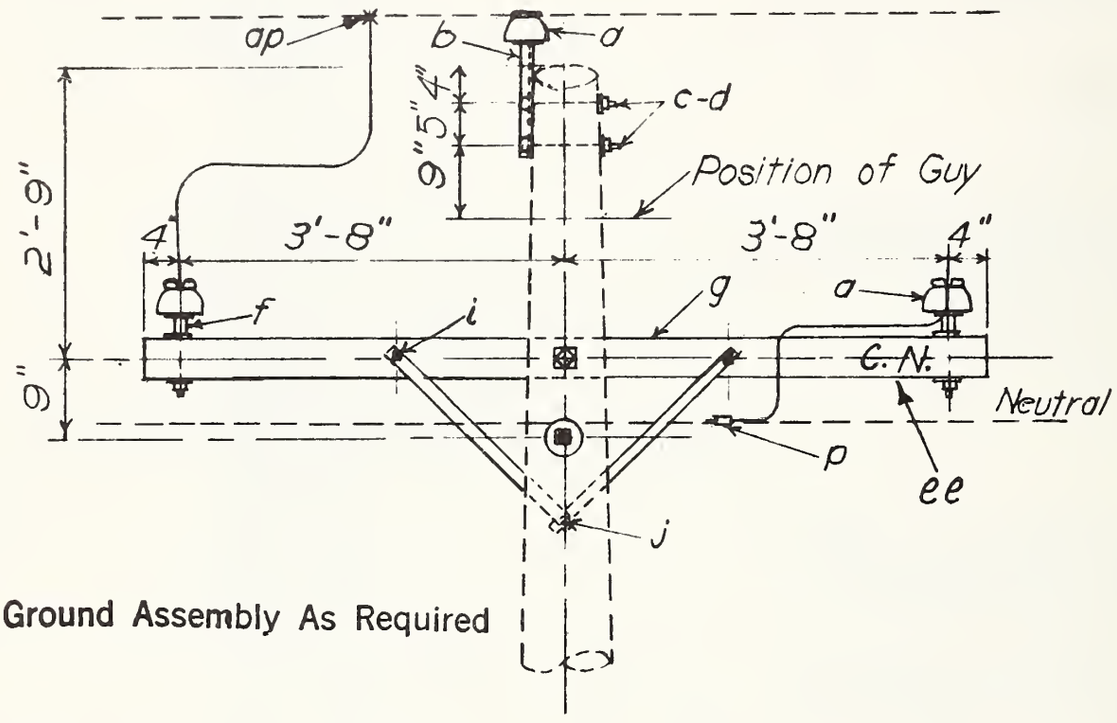
Scale: 1/2" = 1'-0"

Date: July 12, 1956

A20



PLAN



Add Ground Assembly As Required

ELEVATION

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
a	3	Insulator, pin type		i	2	Bolt, carriage, $\frac{3}{8}$" x 4 $\frac{1}{2}$"	
b	1	Pin, pole top, 15"		j	1	Screw, lag, $\frac{1}{2}$" x 4"	
c	3	Bolt, machine, $\frac{5}{8}$" x req'd. length		p		Connectors as req'd	
d	5	Washer, 2 $\frac{1}{4}$" x 2 $\frac{1}{4}$" x $\frac{3}{16}$", $\frac{13}{16}$" hole		ap	1	Clamp, hot line tap assembly	
f	2	Pin, crossarm, steel, $\frac{5}{8}$" x 10 $\frac{3}{4}$"		aq		Jumpers and leads as req'd	
g	1	Crossarm, 3 $\frac{1}{2}$" x 4 $\frac{1}{2}$" x 8'-0"		bs	1	Bolt, single upset, insulated	
h	2	Brace, 1 $\frac{1}{4}$" x $\frac{1}{4}$" x 28"		ee	2	Letters "C.N." 2" with 1" nails	

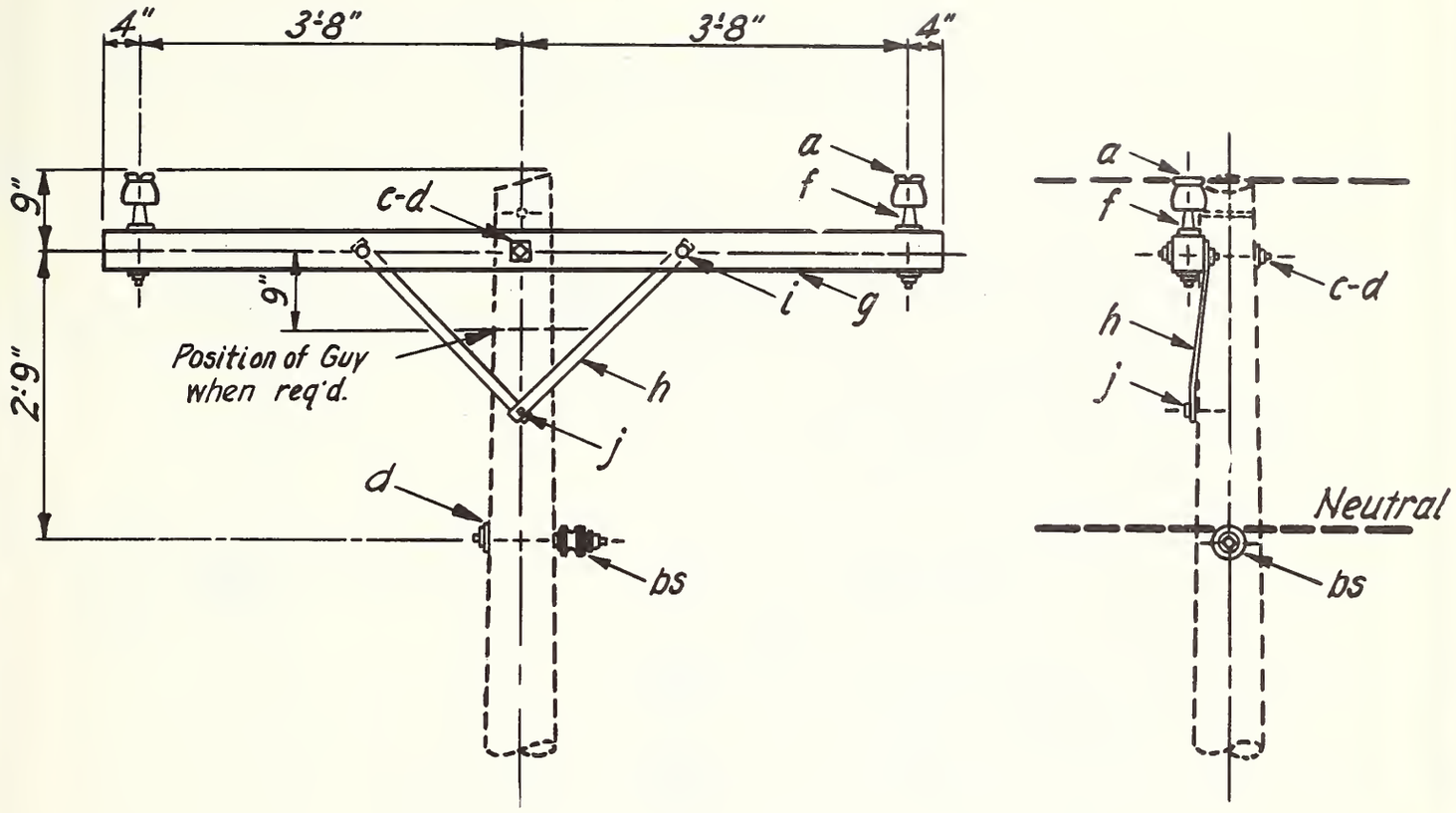
7.2/12.5 KV. PRIMARY 1-PHASE 2-WIRE NEUTRAL GROUNDED CROSSARM CONSTR.-SINGLE-PHASE JUNCTION AT 0° TO 5°

No.	REVISION	DATE
1	Reissued	8-56

Scale: $\frac{1}{2}$" = 1'-0"

Date: Apr. 1, 1952

A22



Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	2	Insulator, pin type		g	1	Crossarm, 3½"×4½"×8'-0"	
c	1	Bolt, machine, 5/8"× req'd. length		h	2	Brace, 1¼"×¼"×28"	
d	3	Washer, 2¼"×2¼"×3/16", 13/16" hole		i	2	Bolt, carriage, 3/8"×4½"	
bs	1	Bolt, single upset, insulated		j	1	Screw, lag, ½"×4"	
f	2	Pin, crossarm, steel, 5/8"×10¾"					

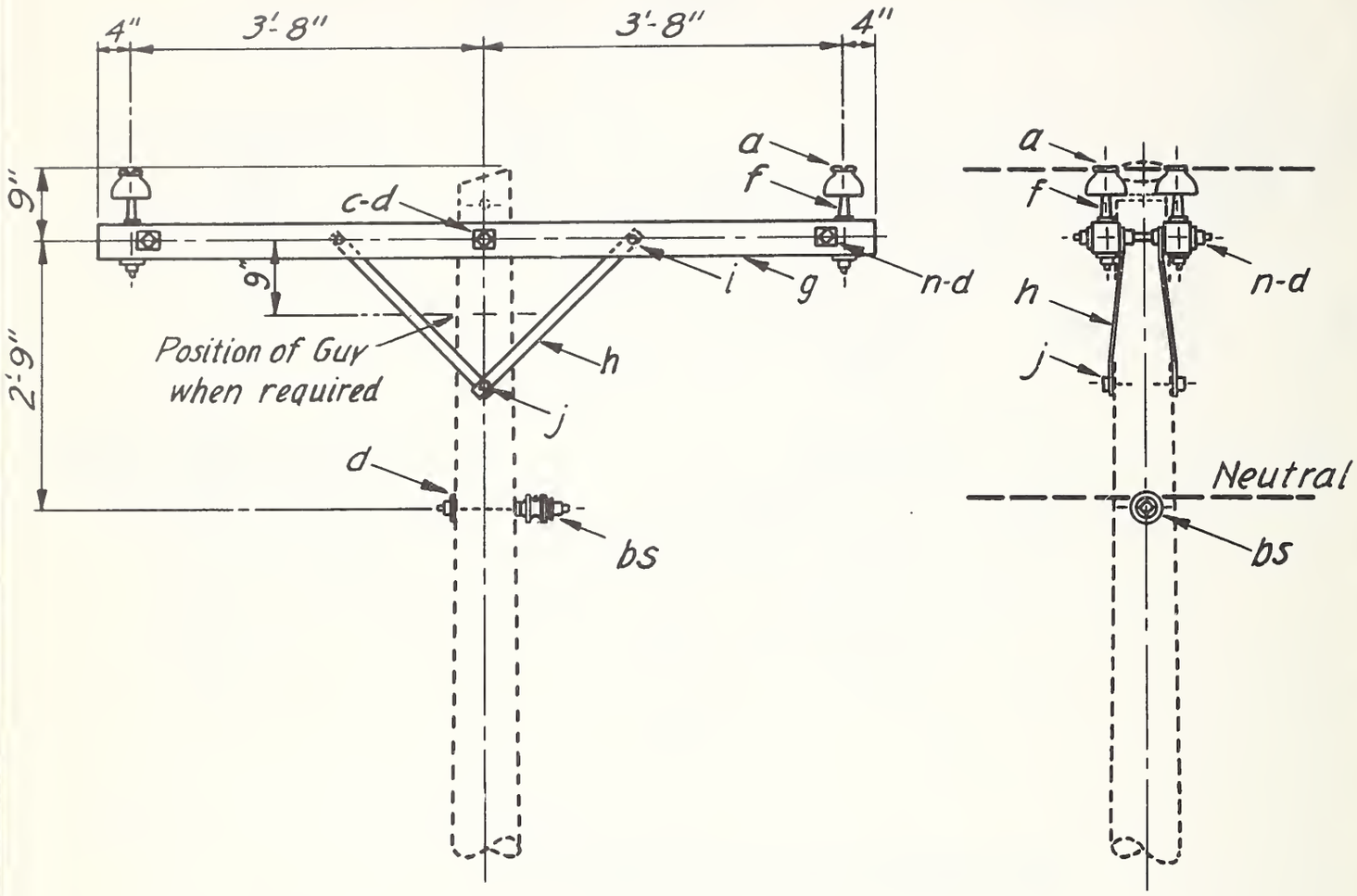
7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL
CROSSARM CONSTR. - 0° TO 5° ANGLE, SINGLE PRIMARY SUPPORT

NO.	REVISION	DATE:
1	Reissued	8-56

Scale: ½"=1'0"

Date:

B1



Add Ground Assembly As Required

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	4	Insulator, pin type		h	4	Brace, 1¼" x ¼" x 28"	
c	1	Bolt, machine, ⅝" x req'd. length		i	4	Bolt, carriage, ⅜" x 4½"	
d	11	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		j	2	Screw, lag, ½" x 4"	
f	4	Pin, crossarm, steel, ⅝" x 10¾"		n	2	Bolt, double arming, ⅝" x req'd. length	
g	2	Crossarm, 3½" x 4½" x 8'-0"		bs	1	Bolt, single upset, insulated	

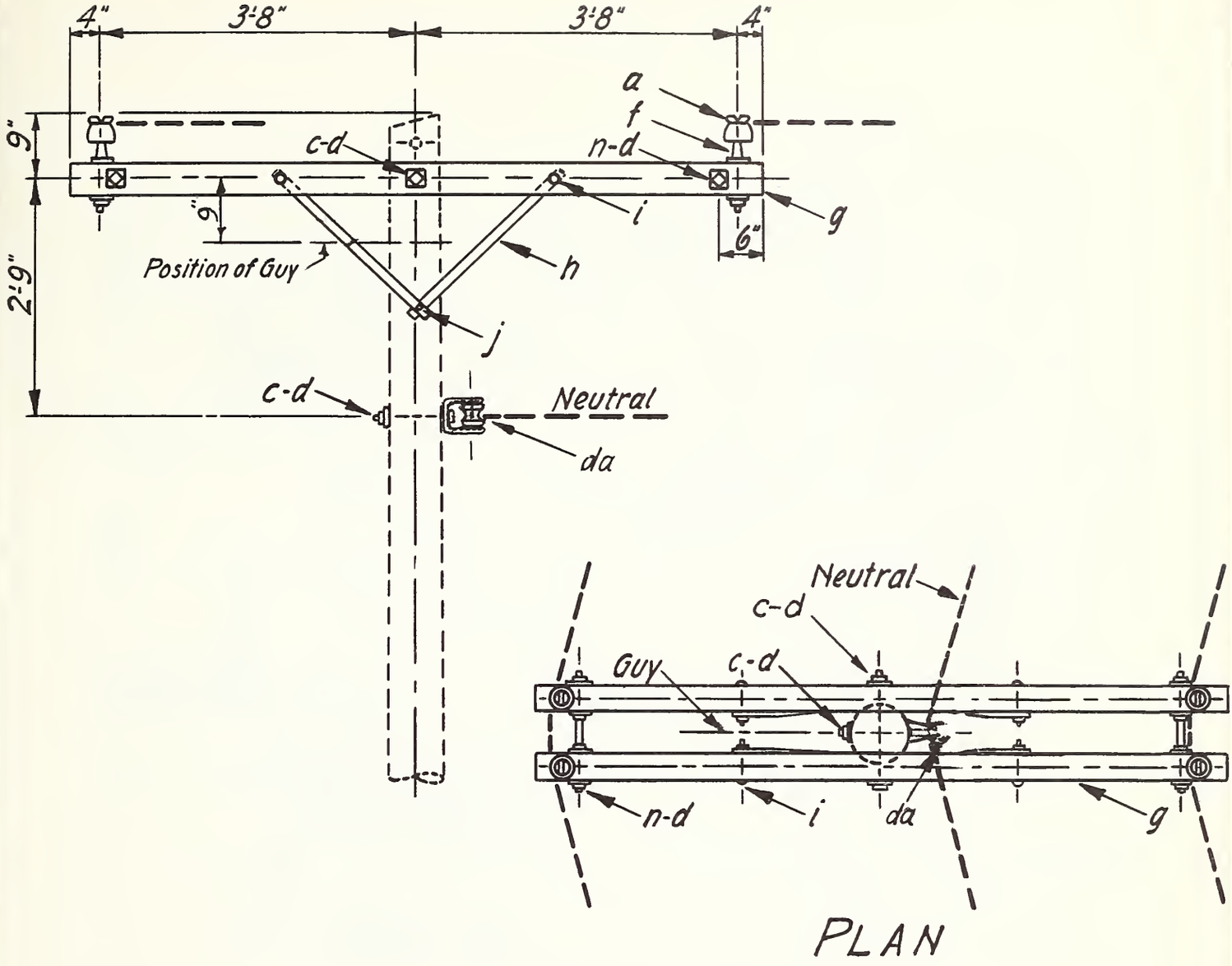
7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL
CROSSARM CONSTR. - 0° TO 5° ANGLE, DOUBLE PRIMARY SUPPORT

Scale: ½" = 1'-0"

Date:

B1-1

NO.	REVISION	DATE:
1	Reissued	8-56



Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	4	Insulator, pin type		i	4	Bolt, carriage, 3/8"×4 1/2"	
c	2	Bolt, machine, 5/8"× req'd. length		j	2	Screw, lag, 1/2"×4"	
d	11	Washer, 2 1/4"×2 1/4"×3/16", 13/16" hole		da	1	Bracket, insulated	
f	4	Pin, crossarm, steel, 5/8"×10 3/4"		n	2	Bolt, double arming, 5/8"× req'd. length	
g	2	Crossarm, 3 1/2"×4 1/2"×8'-0"					
h	4	Brace, 1 1/4"×1/4"×28"					

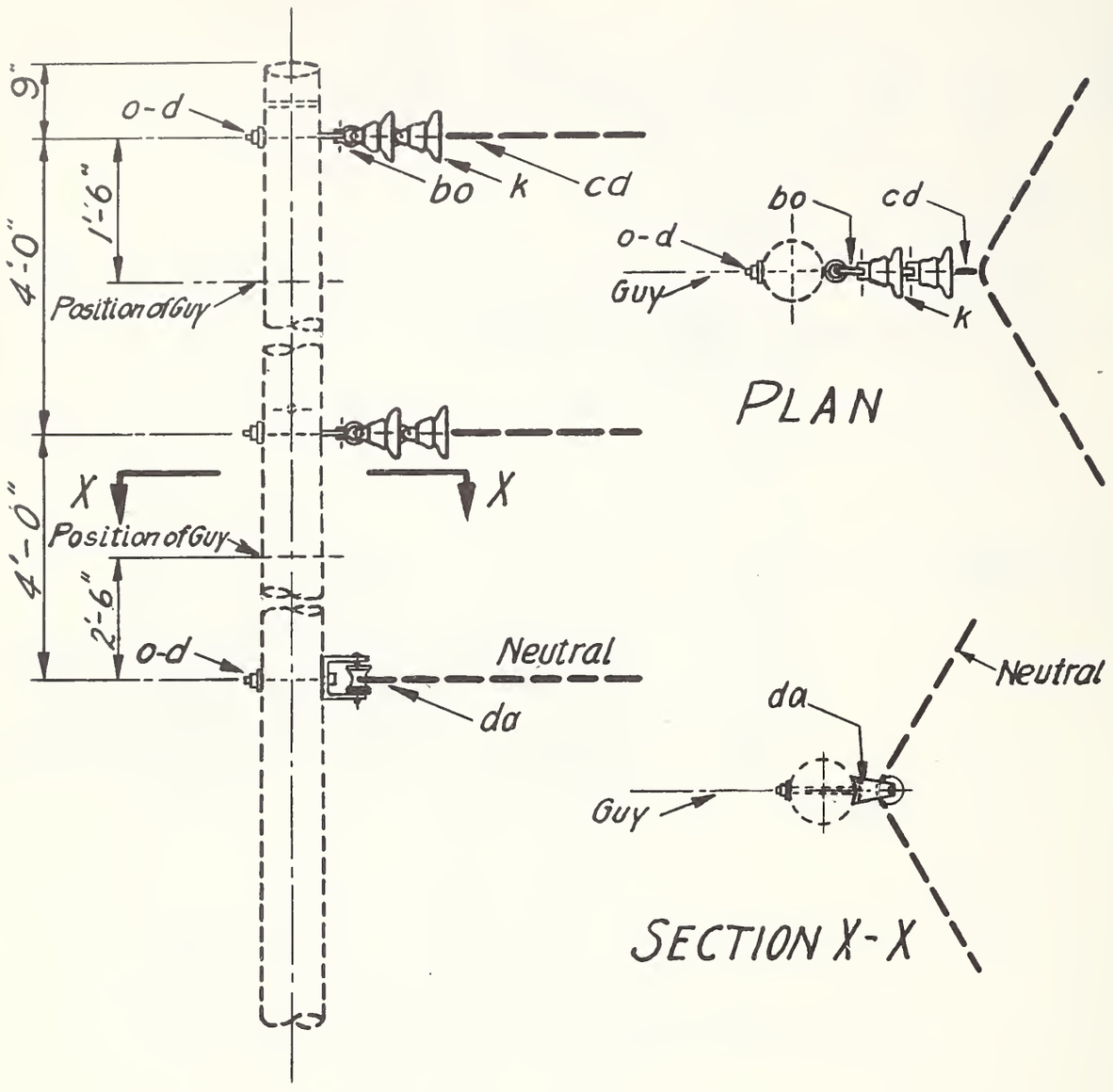
7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL CROSSARM CONSTRUCTION - 5° TO 30° ANGLE

NO.	REVISION	DATE:
1	Reissued	8-56

Scale: 1/2"=1'-0"

Date:

B2



Add Ground Assembly As Required

ITEM	No. REQD.	MATERIAL		ITEM	No. REQD.	MATERIAL	
d	3	Washer, 2¼"x2¼"x 3/16", 13/16" hole		cd	2	Angle assembly, primary	
k	4	Insulator, suspension		da	1	Bracket, insulated	
o	2	Bolt, eye, 5/8" x req'd. length		c	1	Bolt, machine, 5/8" x req'd length	
bo	2	Shackle, anchor.					

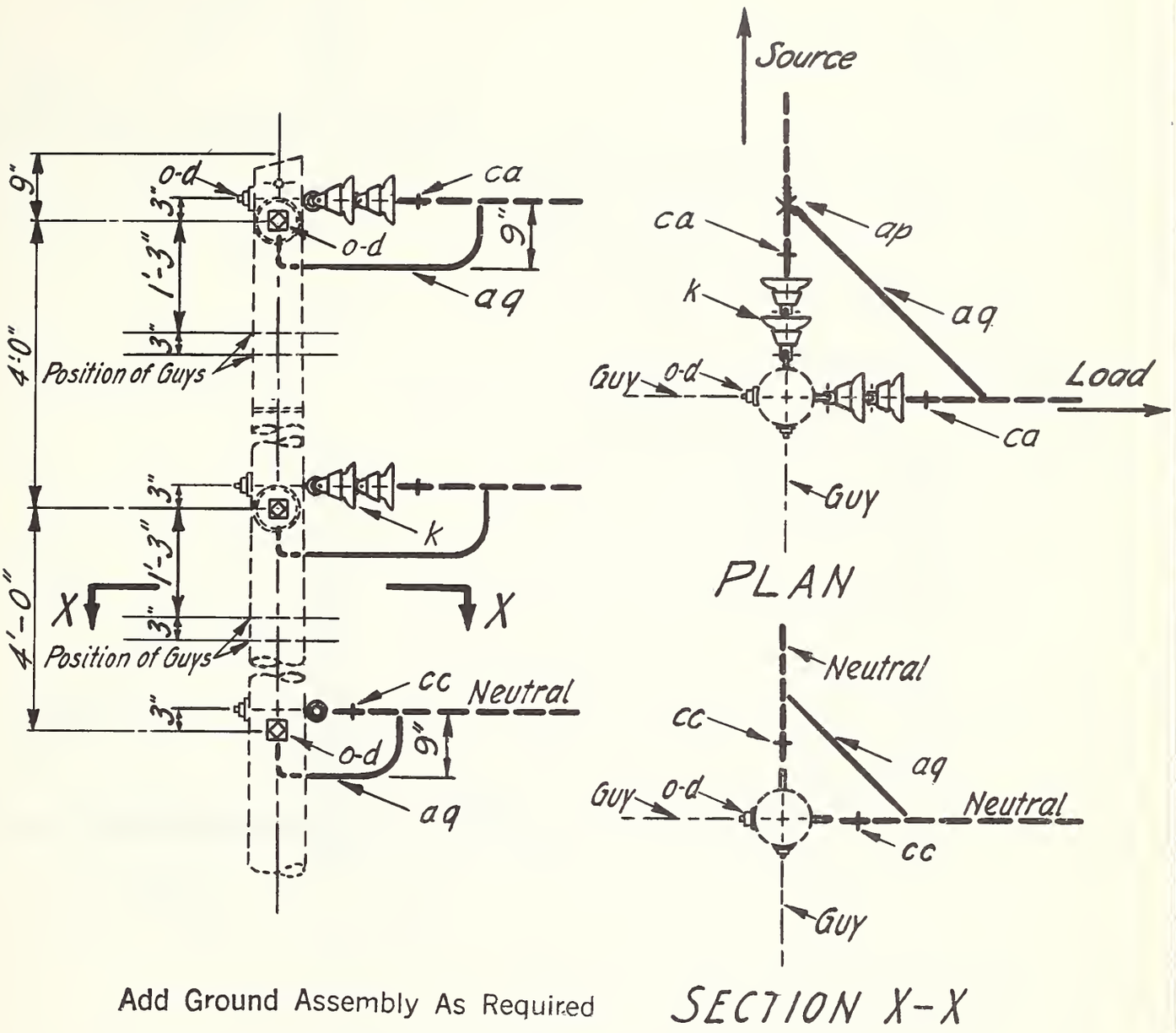
7.2/12.5 K V. PRIMARY, TWO PHASE WIRES AND NEUTRAL
VERTICAL CONSTRUCTION - 30° TO 60° ANGLE

No.	REVISION	DATE:
1	Reissued	8-56

Scale: ½"-1'-0"

Date:

B3



Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
d	6	Washer, 2¼"×2¼"×3/16", 13/16" hole		o	6	Bolt, eye, 5/8"× req'd. length	
k	8	Insulator, suspension		cc	2	Dead end assembly, neutral	
ca	4	Dead end assembly, primary		aq		Jumpers	
p		Connectors, as req'd.					
ap	2	Clamp, hot line, tap assembly					

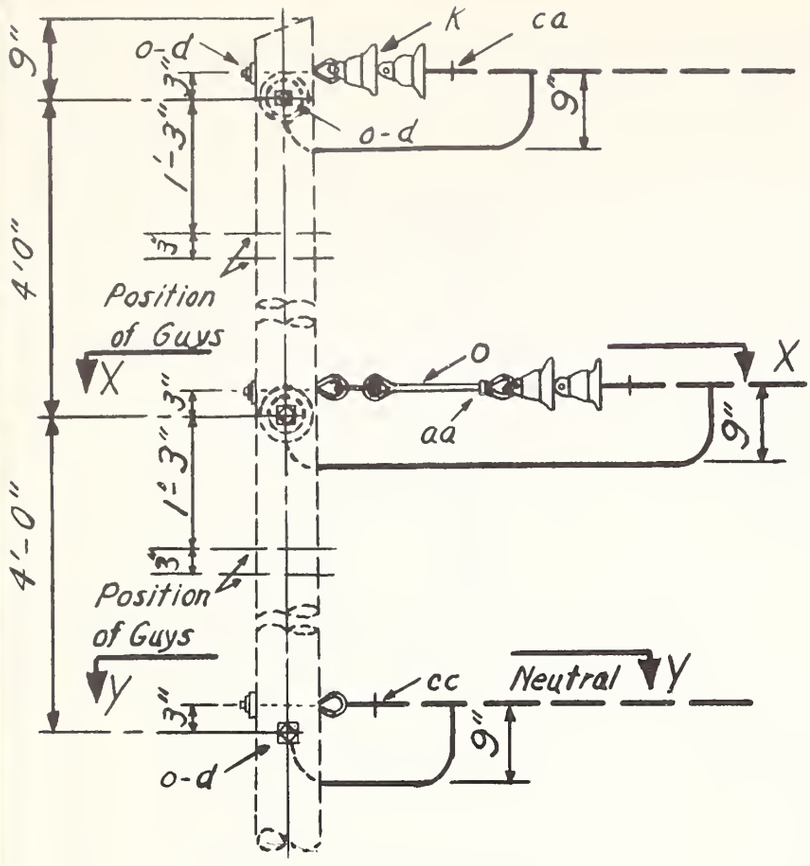
7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL
VERTICAL CONSTRUCTION - 60° TO 90° ANGLE

NO.	REVISION	DATE:
1	Reissued	8-56

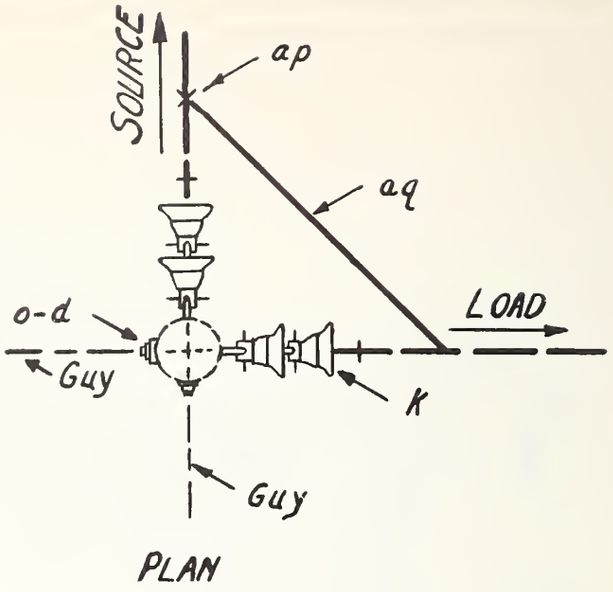
Scale: ½"=1'0"

Date:

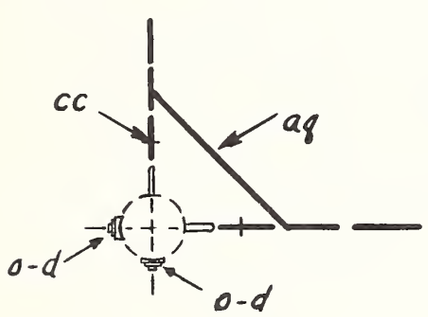
B4



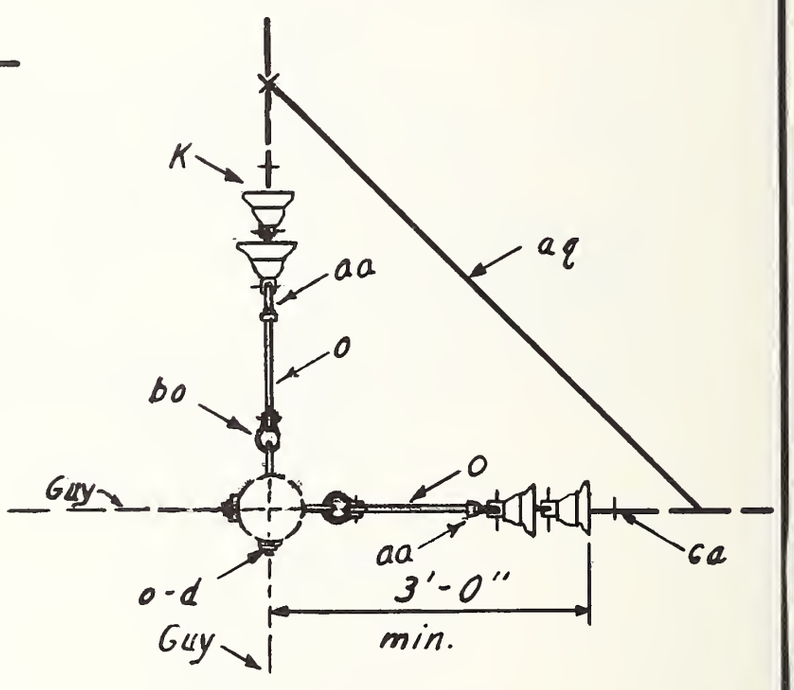
ELEVATION



PLAN



SECTION Y-Y



SECTION X-X

Add Ground Assembly As Required

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
d	6	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		ap	2	Clamp, hot line, tap assembly	
K	8	Insulator, suspension		aq		Jumpers	
				bo	2	Shackle, anchor	
o	8	Bolt, eye, 5/8" x required length		ca	4	Deadend assembly, primary	
p		Connectors, as required		cc	2	Deadend assembly, neutral	
aa	2	Nut, eye, 5/8"					

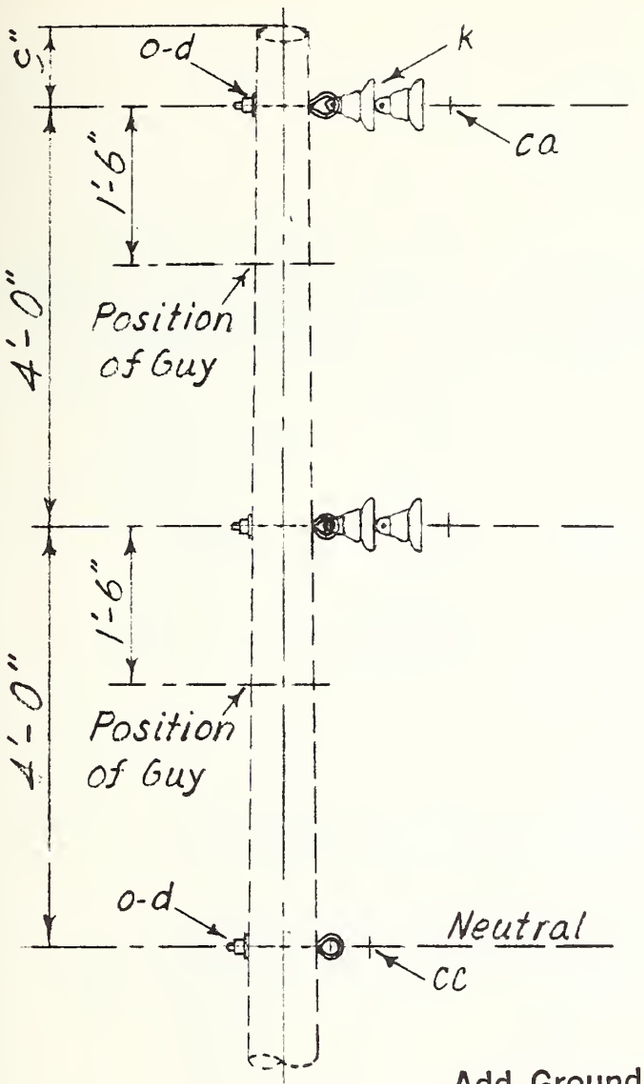
7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL
VERTICAL CONSTRUCTION - 60° TO 90° ANGLE

No.	REVISION	DATE
1	Reissued	8-56

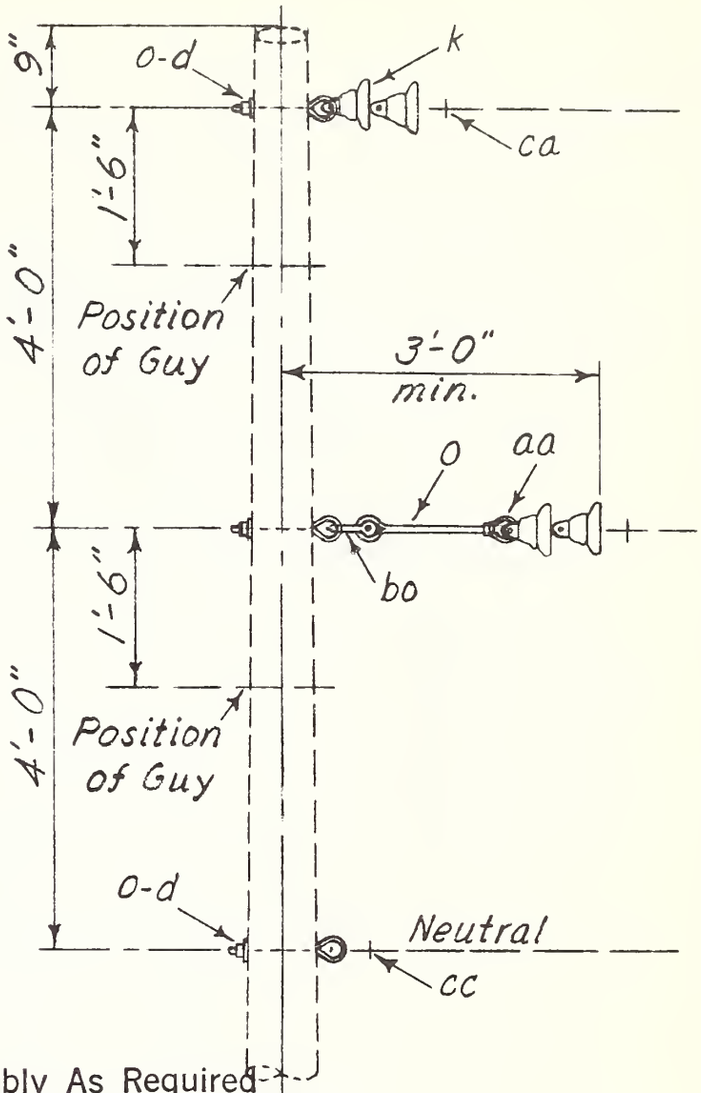
Scale: 1/2" = 1'-0"

Date: Apr. 12, 1949

B 4-1



B5



B5-1

Add Ground Assembly As Required

		ASSEMBLY UNIT		
		B5	B5-1	
ITEM	MATERIAL	No. REQ'D.	No. REQ'D.	
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	3	3	
k	Insulator, suspension	4	4	
o	Bolt, eye, 5/8" x req'd. length	3	4	
aa	Nut, eye, 5/8"		1	
ca	Deadend assembly, primary	2	2	
cc	Deadend assembly, neutral	1	1	
bo	Shackle, anchor		1	

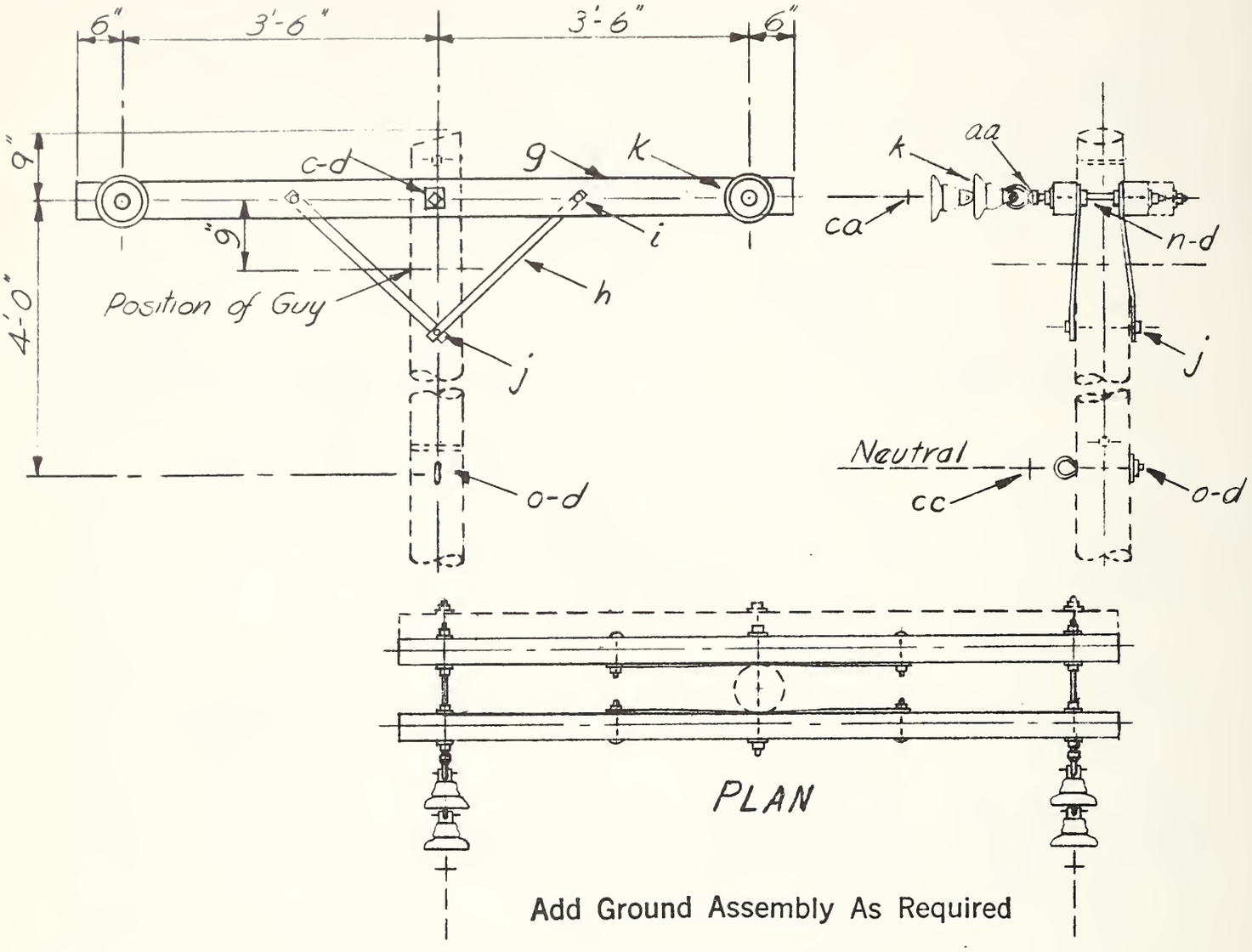
7.2/12.5 KV. PRIMARY TWO PHASE WIRES AND NEUTRAL
VERTICAL CONSTRUCTION-DEADEND (SINGLE)

Scale: 1/2" = 1'-0"

Date: Nov. 3, 1955

B5, B5-1

No.	REVISION	Date



Notes:

1. When crossarm guys are required refer to drawing E5-1.
2. Designate as B7-1 for assembly with three crossarms.

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
c	1	Bolt, machine, 5/8" x req'd. length		k	4	Insulator, suspension	
d	11	Washer, 2 1/4" x 2 1/4" x 3/16" x 13/16" hole		ca	2	Deadend assembly, primary	
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"		n	2	Bolt, double arming, 5/8" req'd. length	
h	4	Brace, 1 1/4" x 1/4" x 28"		o	1	Bolt, eye, 5/8" x req'd. length	
i	4	Bolt, carriage, 3/8" x 4 1/2"		aa	2	Nut, eye, 5/8"	
j	2	Screw, lag, 1/2" x 4"		cc	1	Deadend assembly, neutral	

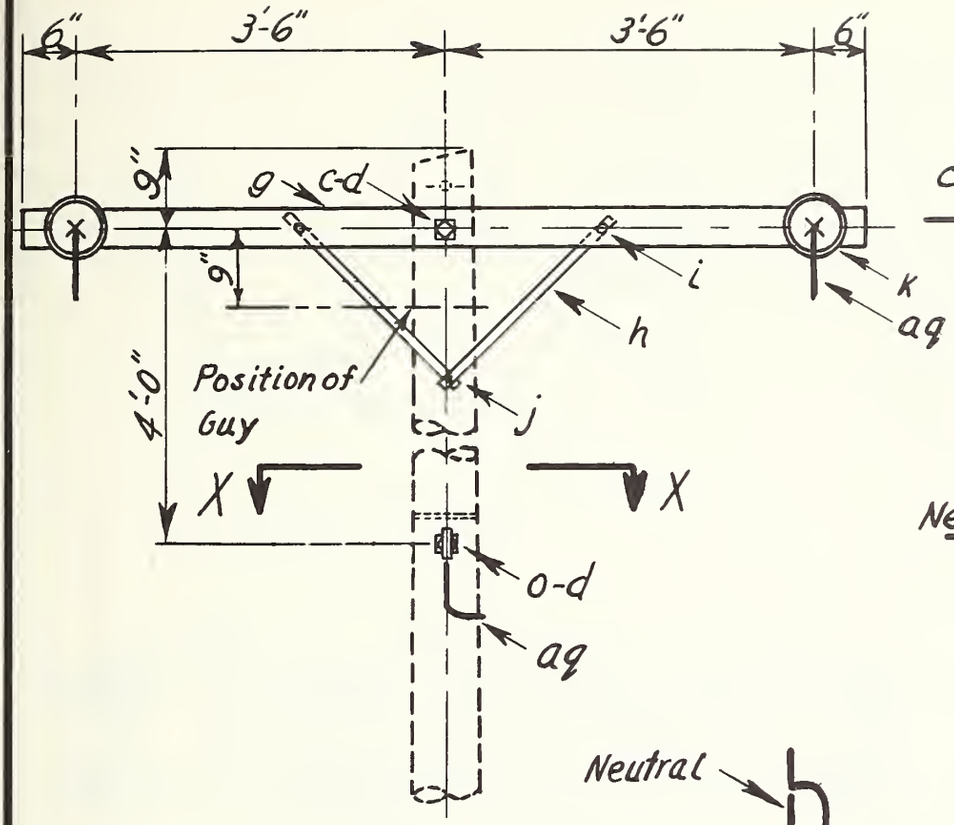
7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL CROSSARM CONSTRUCTION - DEAD END (SINGLE)

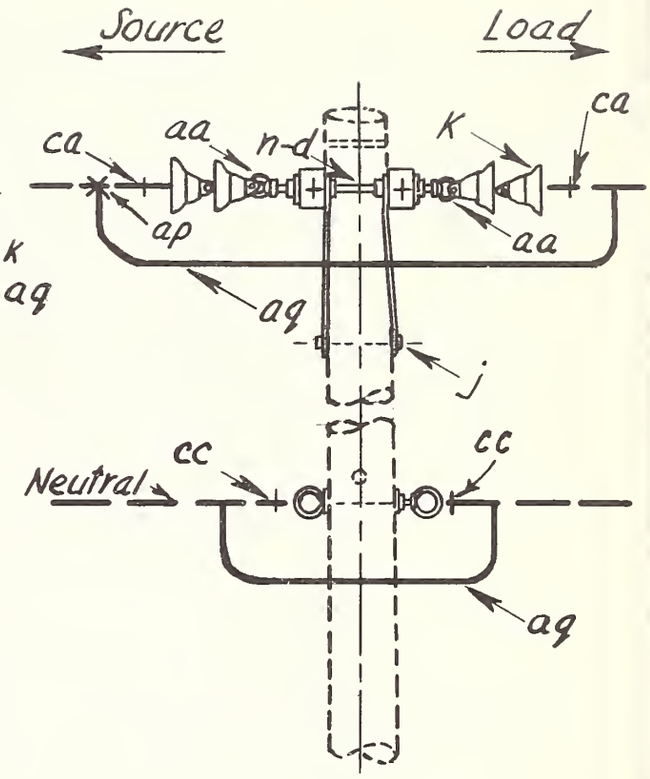
No.	REVISION	Date
1	Revised	11-3-55

Scale: 1/2" = 1'-0"

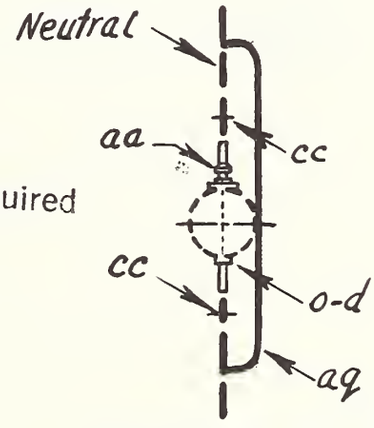
Date: Apr. 12, 1949

B7, B7-1





Add Ground Assembly As Required



SECTION X-X

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
c	1	Bolt, machine, 5/8" x req'd. length		o	1	Bolt, eye, 5/8" x req'd. length	
d	12	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		p		Connectors, as req'd.	
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"		aa	5	Nut, eye, 5/8"	
h	4	Brace, 1 1/4" x 1/4" x 28"		aq		Jumpers	
i	4	Bolt, carriage, 3/8" x 4 1/2"		ap	2	Clamp, hot line, tap assembly	
j	2	Screw, lag, 1/2" x 4"		ca	4	Deadend assembly, primary	
K	8	Insulator, suspension		cc	2	Deadend assembly, neutral	
n	2	Bolt, double arming, 5/8" x req'd. length					

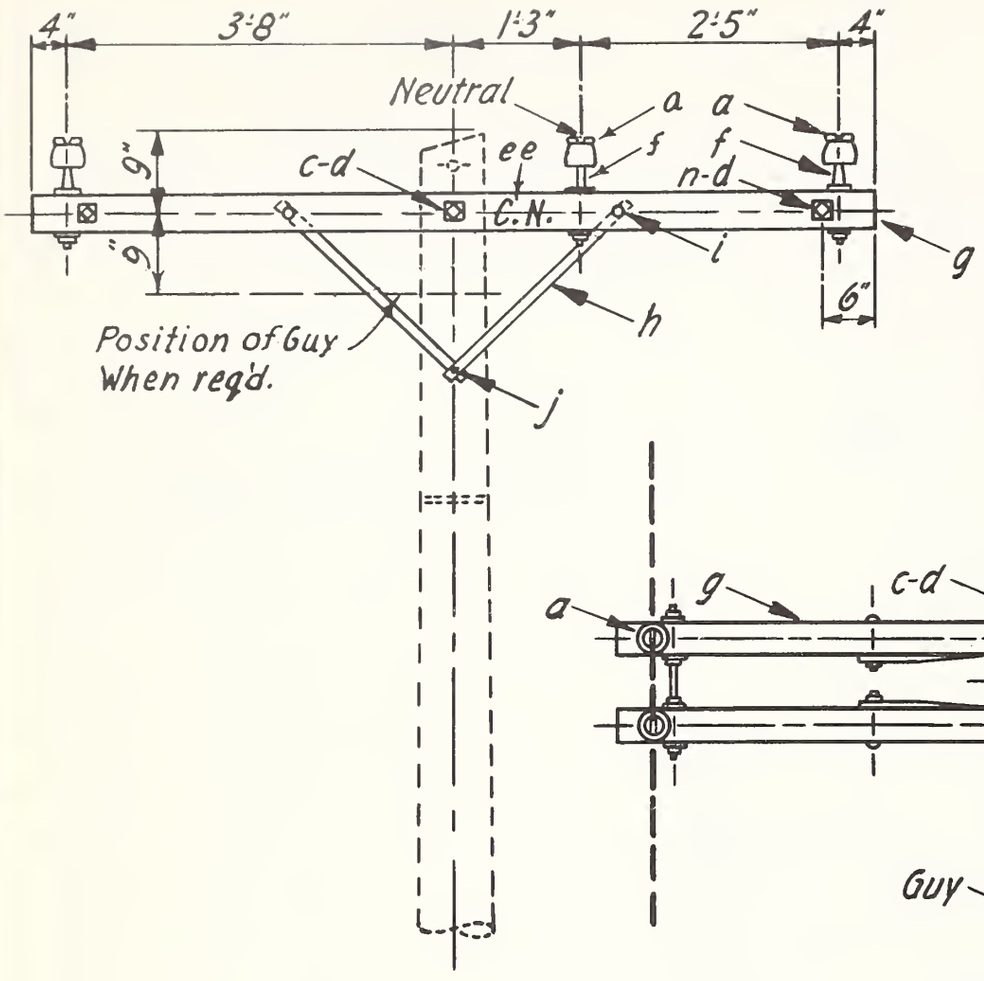
7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL CROSSARM CONSTRUCTION - DEADEND (DOUBLE)

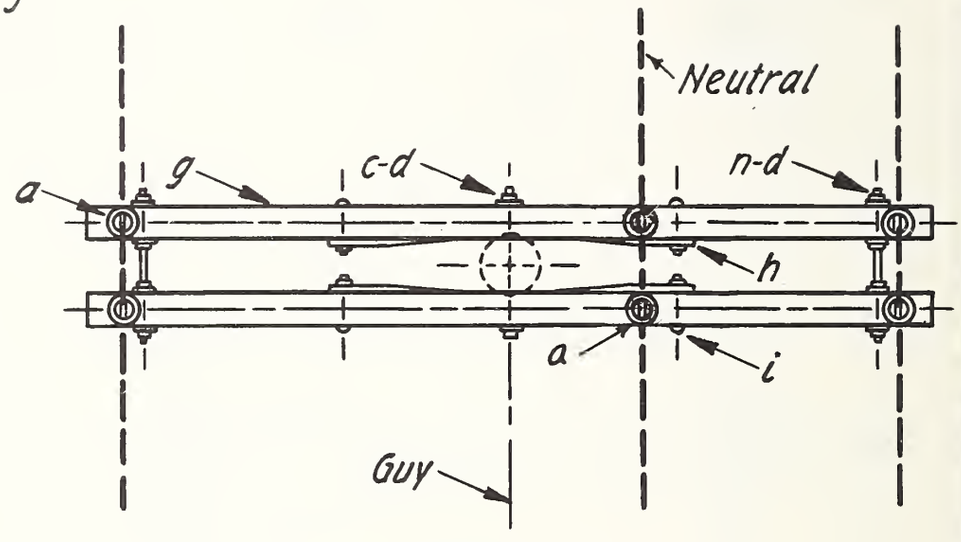
No.	REVISION	Date
1	Reissued	8-56

Scale: 1/2" = 1'-0"

Date: Apr. 12, 1949

B 8





PLAN.

Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	6	Insulator, pin type		h	4	Brace, 1¼"×¼"×28"	
c	1	Bolt, machine, ⅝"×req'd. length		i	4	Bolt, carriage, ⅜"×4½"	
d	10	Washer, 2¼"×2¼"×3/16", 13/16" hole		j	2	Screw, lag, ½"×4"	
f	6	Pin, crossarm, steel, ⅝"×10¾"		n	2	Bolt, double arming, ⅝"×req'd. length	
g	2	Crossarm, 3½"×4½"×8'0"		ee	2	Letters "C.N", 2", with 1" nails	

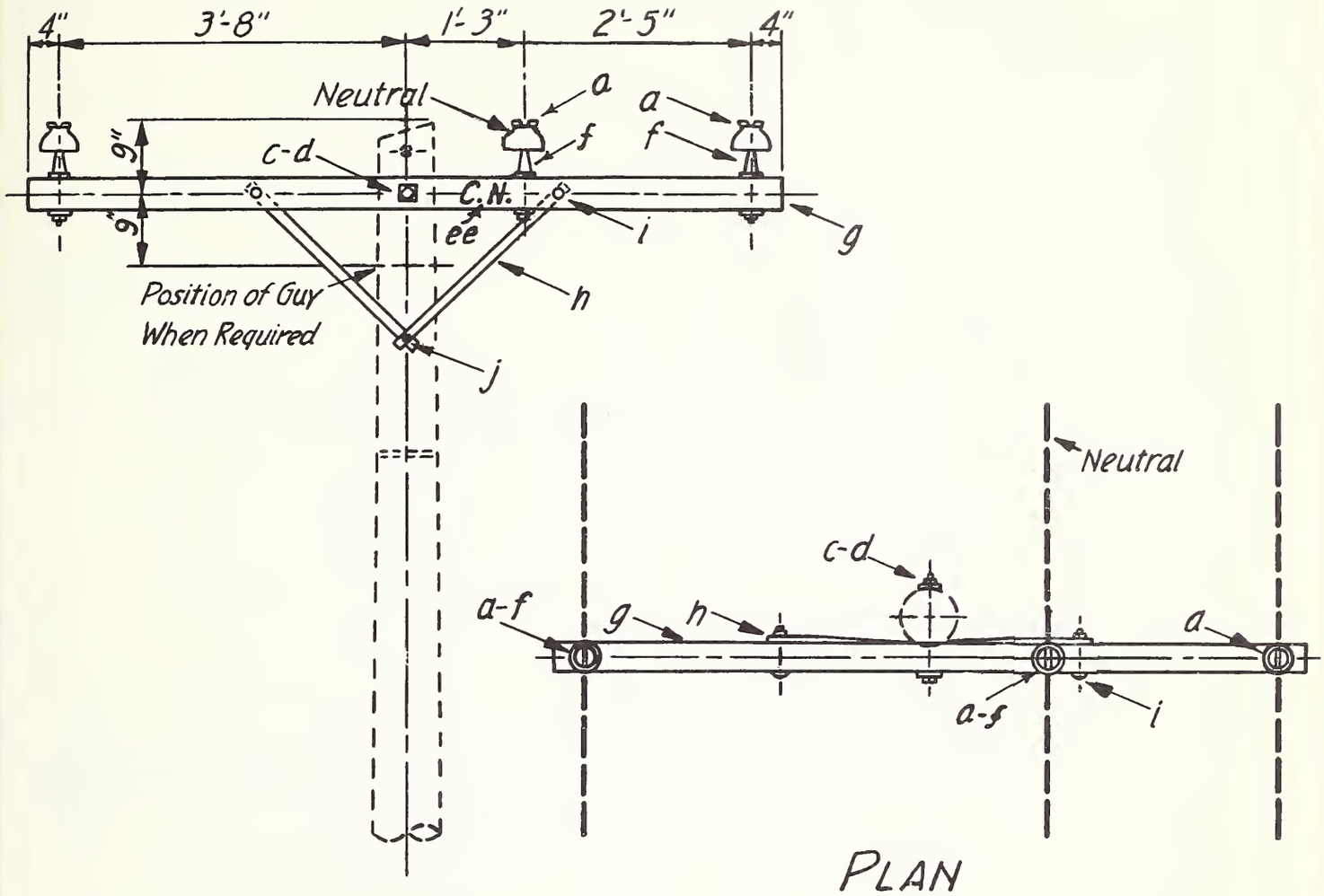
7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL
CROSSARM CONSTRUCTION – DOUBLE LINE ARM

NO.	REVISION	DATE:
1	Reissued	8-56

Scale: ½"=1'0"

Date:

B9



PLAN

Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	3	Insulator, pin type		h	2	Brace, 1¼"×¼"×28"	
c	1	Bolt, machine, ⅝"× req'd. length		i	2	Bolt, carriage, ⅜"×4½"	
d	2	Washer, 2¼"×2¼"×3/16", 13/16" hole		j	1	Screw, lag, ½"×4"	
f	3	Pin, crossarm, steel, ⅝"×10¾"		ee	2	Letters C.N., 2", with 1" nails	
g	1	Crossarm, 3½"×4½"×8'-0"					

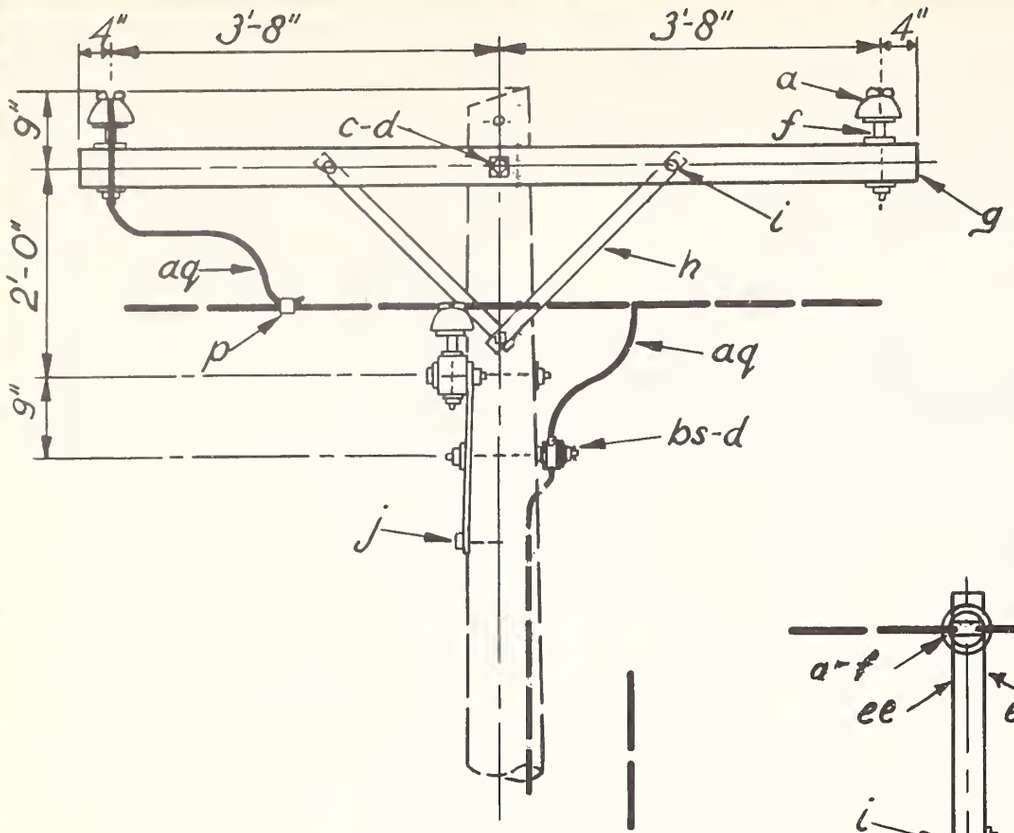
NO.	REVISION	DATE:
1	Reissued	8-56

7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL
CROSSARM CONSTRUCTION - SINGLE LINE ARM

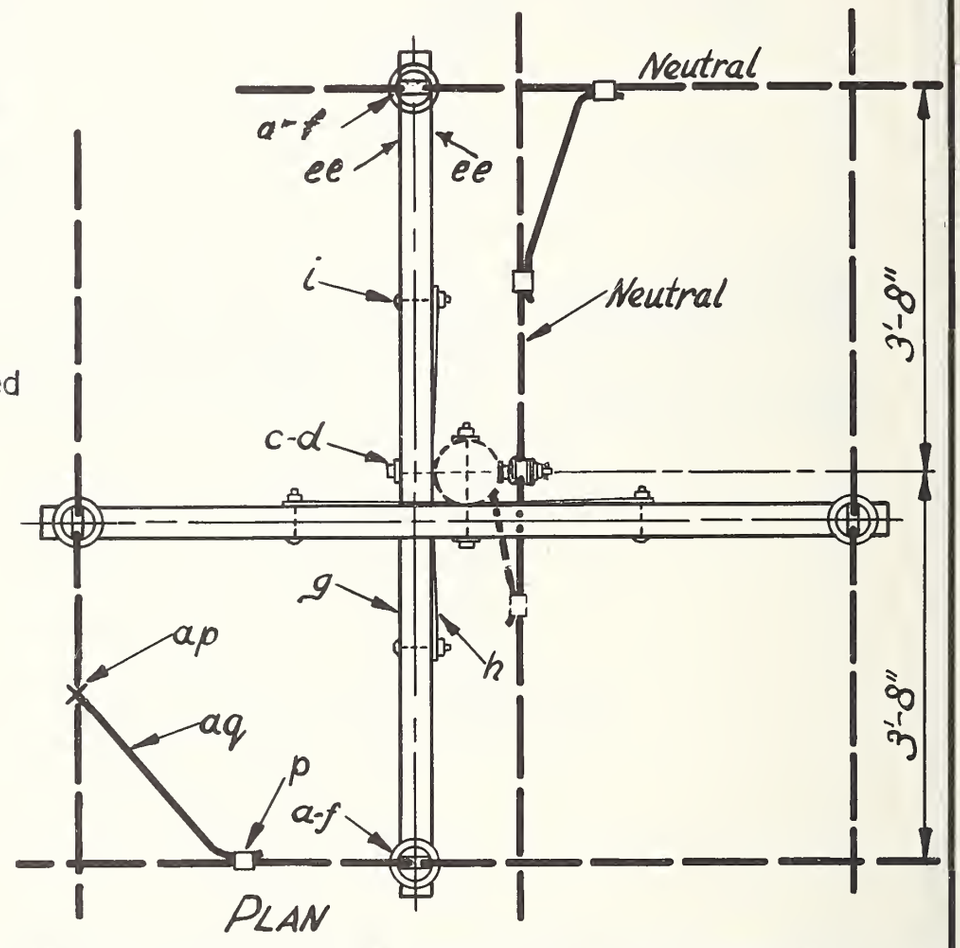
Scale: ½"=1'-0"

Date:

B9-1



Add Ground Assembly As Required



PLAN

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	4	Insulator, pin type		j	2	Screw, lag, ½"x4"	
c	2	Bolt, machine, ⅝" x req'd. length		p		Connectors, as req'd.	
d	5	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		ee	2	Letters "C. N.," 2," with 1" nails	
f	4	Pin, crossarm, steel, ⅝" x 10¼"		ap	1	Clamp, hot line, tap assembly	
g	2	Crossarm, 3½" x 4½" x 8'-0"		aq		Jumpers and leads as req'd.	
h	4	Brace, flat, 1¼" x ¼" x 28"		bs	1	Bolt, single upset, insulated	
i	4	Bolt, carriage, ⅜" x 4½"					

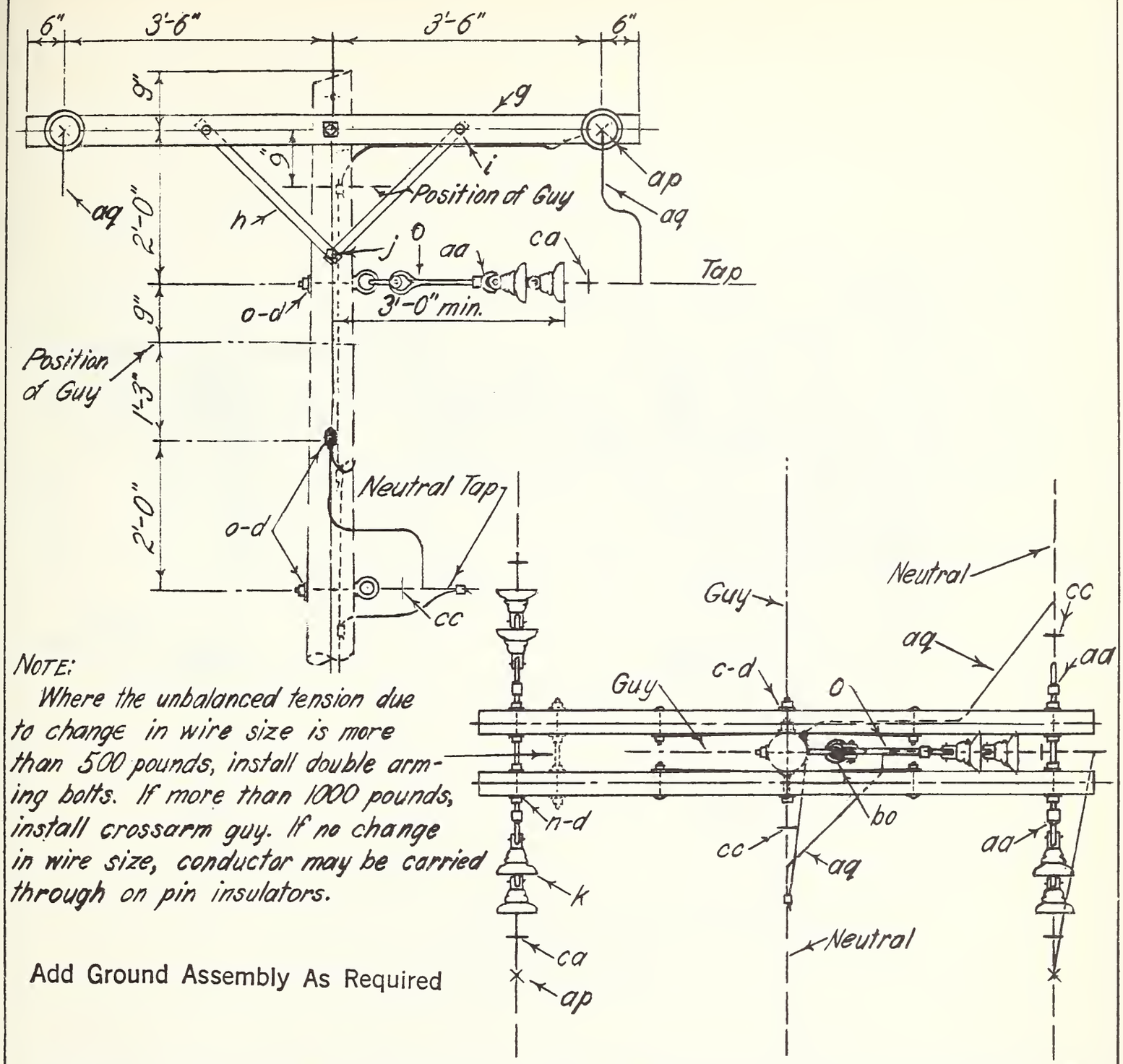
7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL CROSSARM CONSTR.-SINGLE-PHASE JUNCTION AT 0° TO 5° ANGLE

Scale: ½"=1'-0"

Date: Apr. 12, 1949

B22

No.	REVISION	DATE
1	Reissued	8-56



NOTE:

Where the unbalanced tension due to change in wire size is more than 500 pounds, install double arming bolts. If more than 1000 pounds, install crossarm guy. If no change in wire size, conductor may be carried through on pin insulators.

Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
c	1	Bolt, machine, 5/8" x req'd. length		o	4	Bolt, eye, 5/8" x req'd. length	
d	13	Washer, 2 1/4" x 2 1/4" x 5/16", 13/16" hole		p		Connectors, as req'd.	
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"		aa	5	Nut, eye, 5/8"	
h	4	Brace, flat, 1 1/4" x 1/4" x 28"		ap	2	Clamp, hot line, tap assembly	
i	4	Bolt, carriage, 3/8" x 4 1/2"		bo	1	Shackle, anchor	
j	2	Screw, lag, 1/2" x 4"		ca	4	Deadend assembly, primary	
k	8	Insulator, suspension		cc	3	Deadend assembly, neutral	
n	2	Bolt, double arming, 5/8" x req'd. lgth.					
aq		Jumpers					

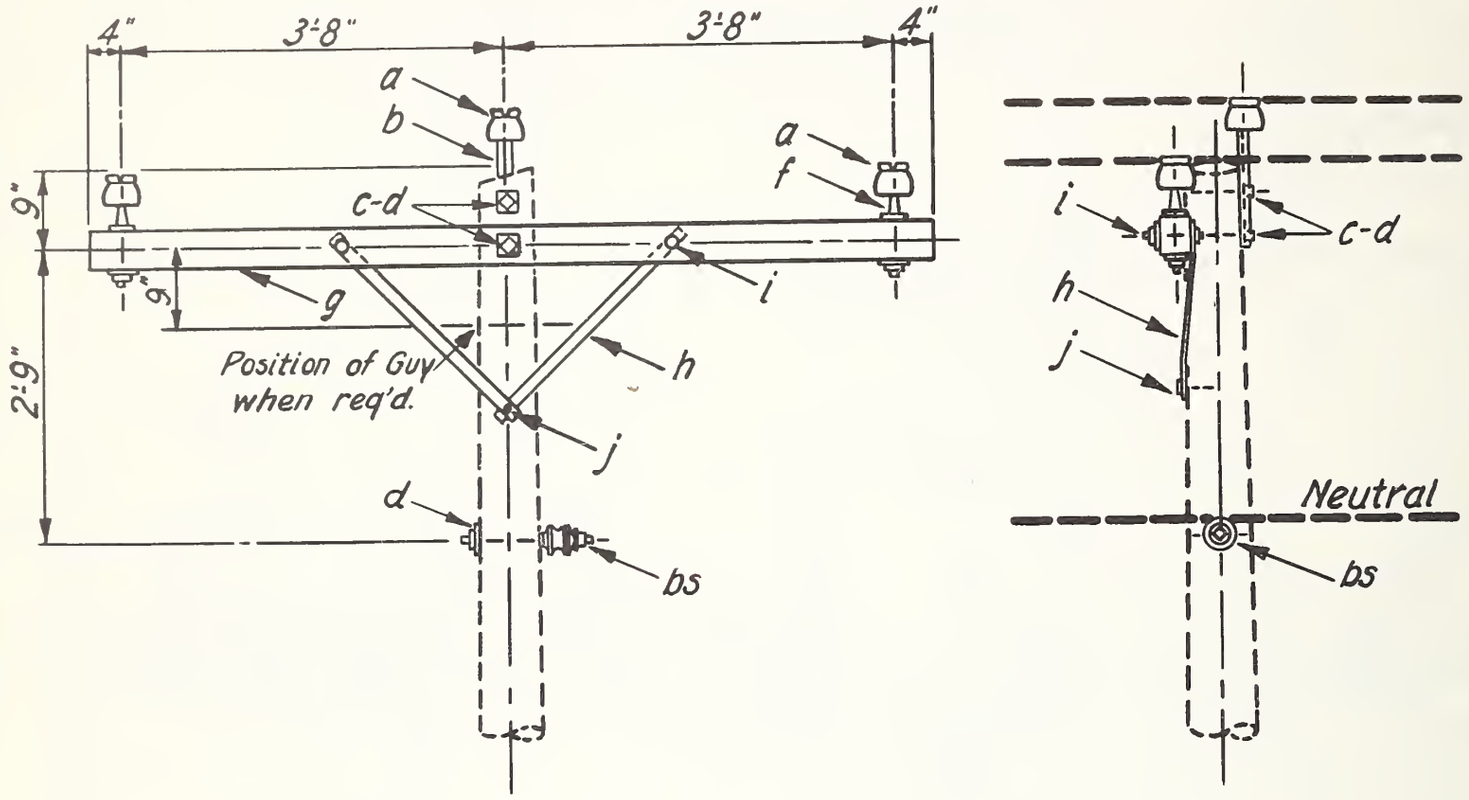
7.2/12.5 KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL CROSSARM CONSTRUCTION-1-PHASE CONTINUING

No.	REVISION	DATE
1	Reissued	8-56

Scale: 1/2" = 1'-0"

Date: Apr. 19, 1949

B 41



Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	3	Insulator, pin type		g	1	Crossarm, 3½" × 4½" × 8'-0"	
b	1	Pin, pole top, 15"		h	2	Brace, 1¼" × ¼" × 28"	
c	2	Bolt, machine, ⅝" × req'd. length		i	2	Bolt, carriage, ⅜" × 4½"	
d	3	Washer, 2¼" × 2¼" × 3/16", 13/16" hole		j	1	Screw, lag, ½" × 4"	
bs	1	Bolt, single upset, insulated					
f	2	Pin, crossarm, steel, ⅝" × 10¾"					

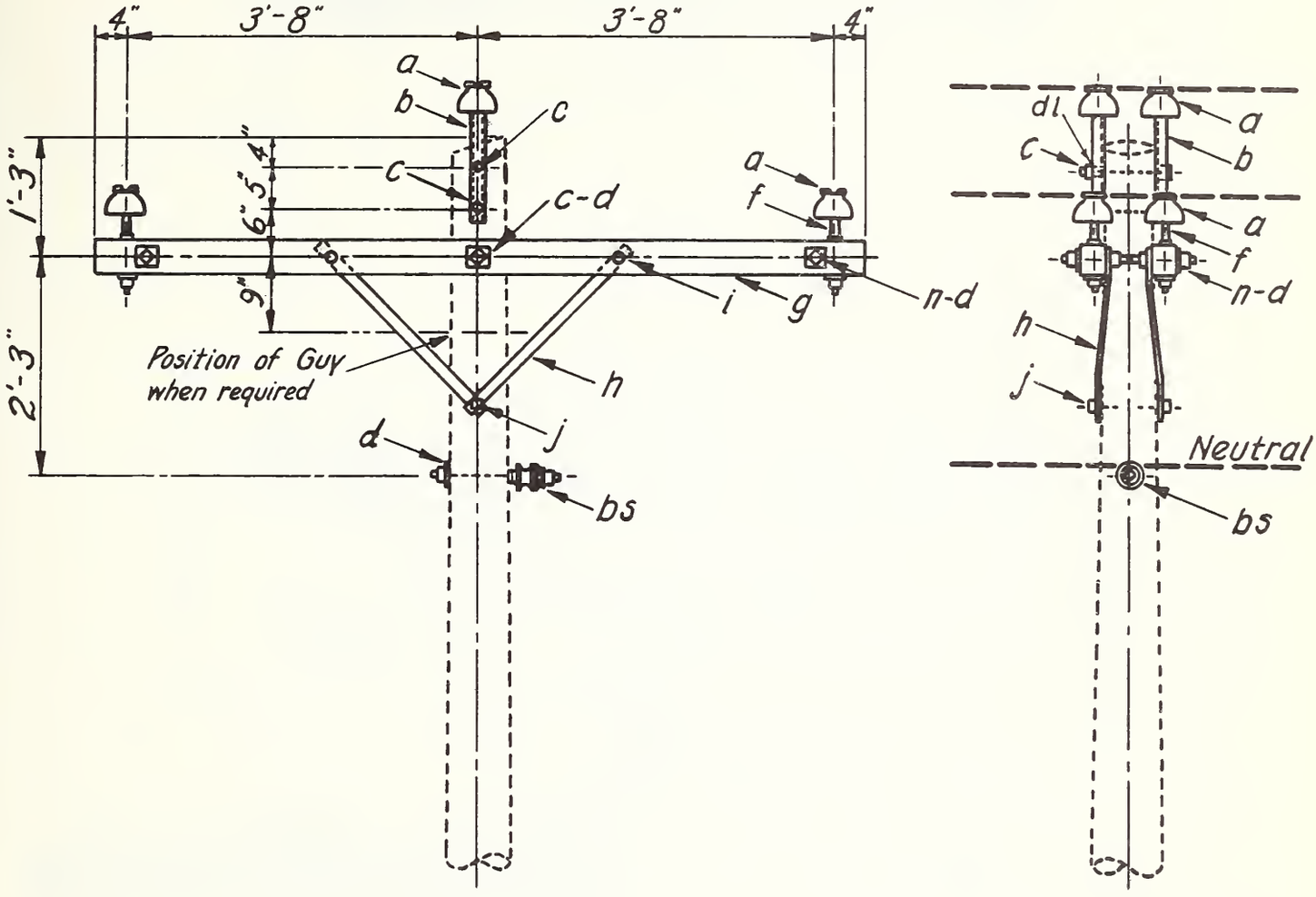
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
CROSSARM CONSTR.–SINGLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

NO.	REVISION	DATE:
1	Reissued	8-56

Scale: ½" = 1'-0"

Date:

C1



Add Ground Assembly As Required

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	6	Insulator, pin type		h	4	Brace, 1¼" × ¼" × 28"	
b	2	Pin, pole top, 15"		i	4	Bolt, carriage, ⅜" × 4½"	
c	3	Bolt, machine, ⅝" × req'd. length		j	2	Screw, lag, ½" × 4"	
d	11	Washer, 2¼" × 2¼" × ⅜", 13/16" hole		n	2	Bolt, double arming, ⅝" req'd. length	
f	4	Pin, crossarm, steel, ⅝" × 10¾"		bs	1	Bolt, single upset, insulated	
g	2	Crossarm, 3½" × 4½" × 8'-0"		dl	2	Pipe spacer, ¾" dia. x 1 1/2"	

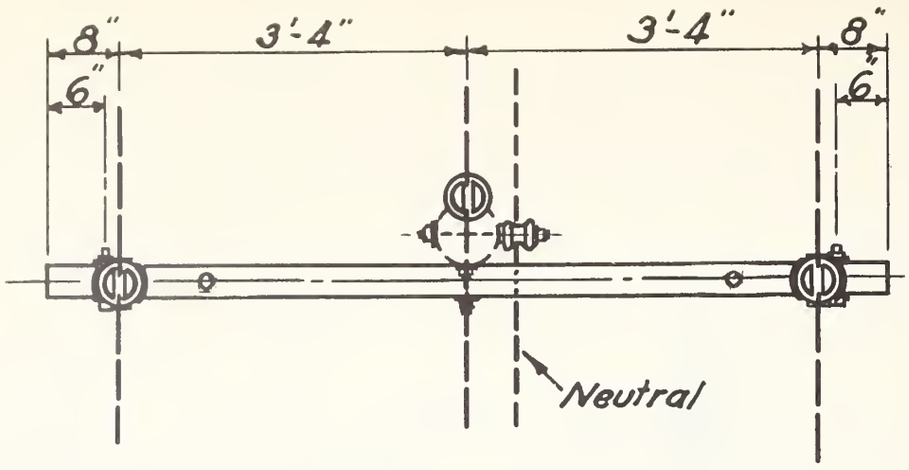
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
CROSSARM CONSTR.-DOUBLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

NO.	REVISION	DATE:
1	Reissued	8-56

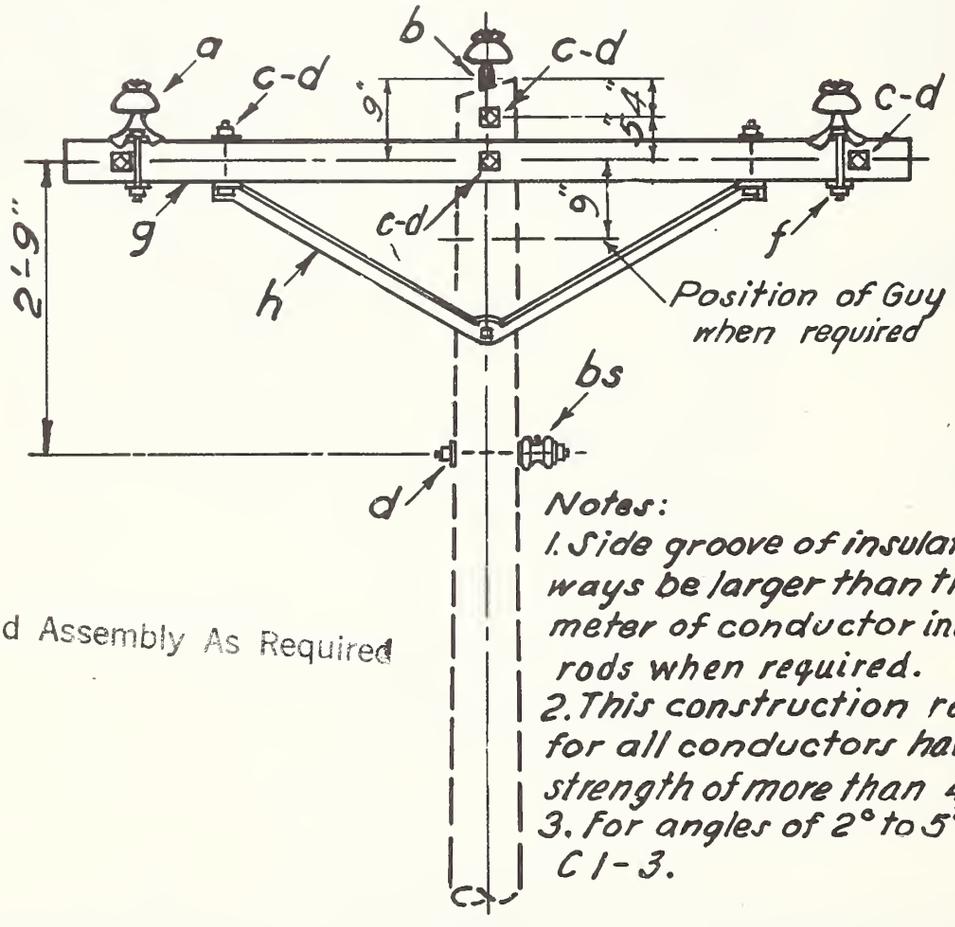
Scale: ½"=1'-0"

Date:

C1-1



PLAN



Add Ground Assembly As Required

Notes:
1. Side groove of insulator must always be larger than the overall diameter of conductor including armor rods when required.
2. This construction required for all conductors having a breaking strength of more than 4,500 pounds.
3. For angles of 2° to 5° refer to drawing C1-3.

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	3	Insulator, pin type		g	1	Crossarm, 3 3/4" x 4 3/4" x 8'-0"	
b	1	Pin, pole top, 15"		h	1	Brace, 1 1/2" x 1 1/2" x 3/16", 60" span	
c	5	Bolt, machine, 5/8" x req'd. lg'th		bs	1	Bolt, single upset, insulated	
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		c	2	Bolt, machine, 1/2" x req'd. lg'th	
f	2	Pin, crossarm, clamp type		d	2	Washer, rd. 1 3/8" diam, 9/16" hole	

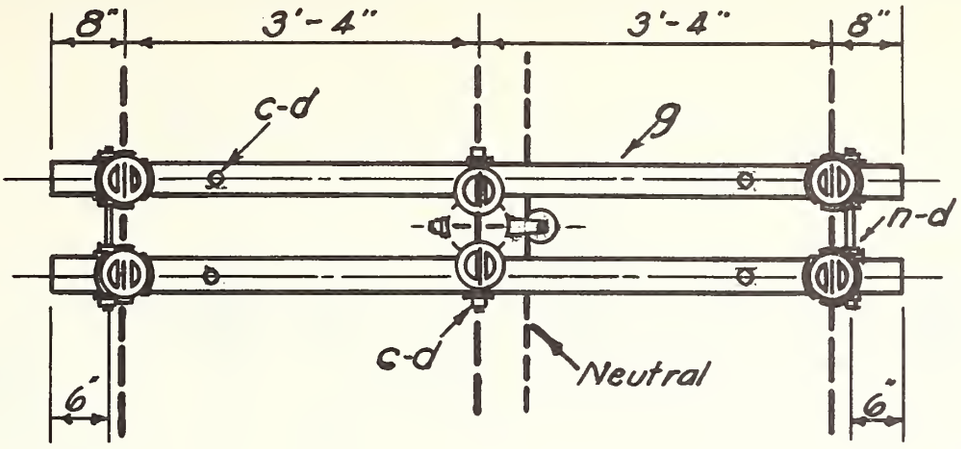
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION 0° TO 2° ANGLE (LARGE CONDUCTORS)

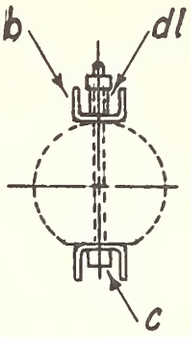
Scale: 1/2" = 1'-0

Date: Mar. 25, 1947

No.	REVISION	DATE
1	Reissued	8-56

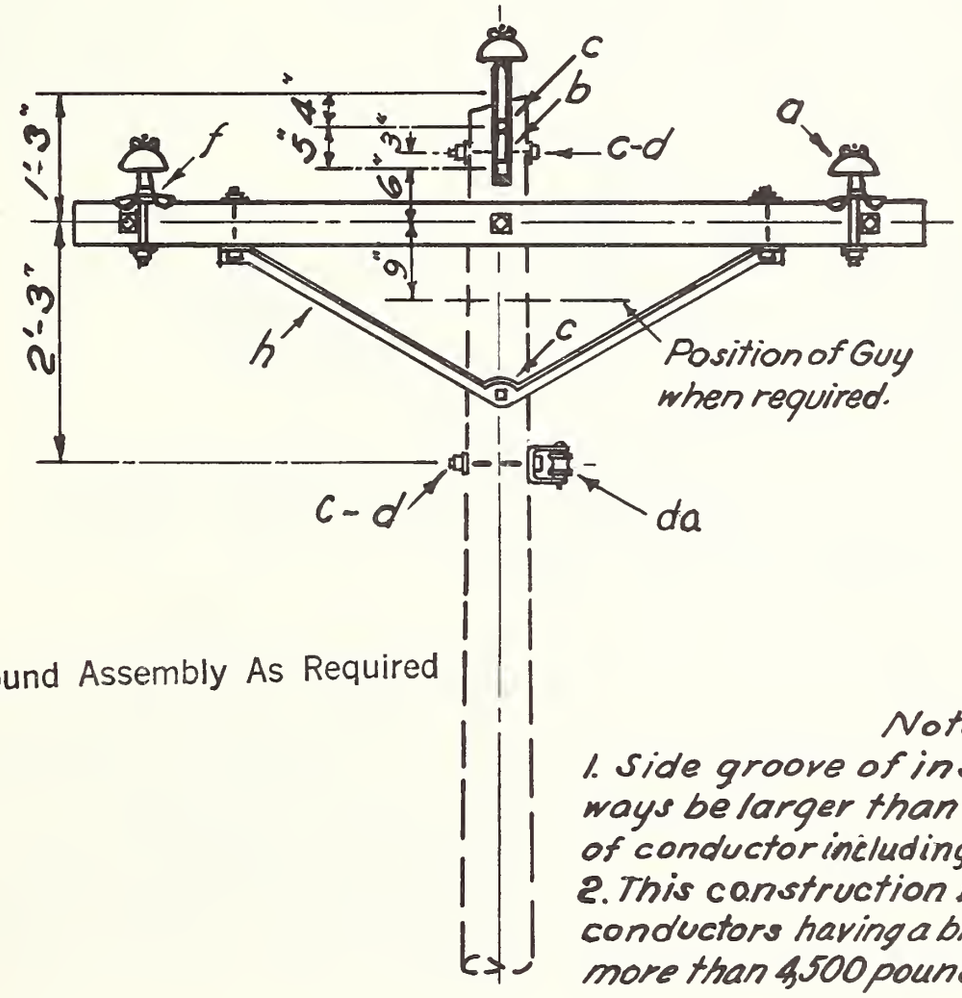
C1-2





DETAIL OF POLE TOP PIN ASSEMBLY

PLAN



Add Ground Assembly As Required

Notes:

1. Side groove of insulator should always be larger than the overall diameter of conductor including armor rods when req'd.
2. This construction required for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	6	Insulator, pin type		f	4	Pin, crossarm, steel, clamp type	
b	2	Pin, pole top, 15"		g	2	Crossarm, 3 3/4"x4 3/4"x8'-0" lg.	
c	6	Bolt, machine, 5/8" x req'd. length		h	2	Brace, angle, 1 1/2"x1 1/2"x 3/16, 60" sp.	
c	4	Bolt, machine, 1/2" x req'd. length		n	2	Bolt, double arming, 5/8" x req'd. lgth.	
d	13	Washer, 2 1/4"x2 1/4"x 3/16, 13/16 hole		da	1	Bracket, insulated	
d	4	Washer, rd., 1 3/8 diam, 9/16 hole		d1	2	Pipe spacer, 3/4" dia. x 1 1/2"	

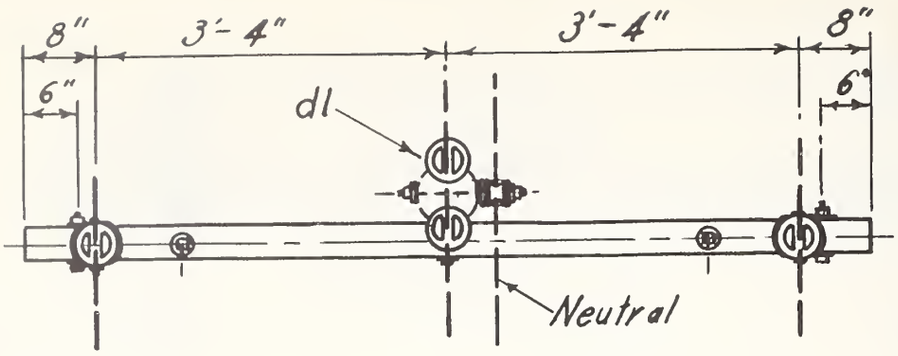
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION, DOUBLE PRIMARY SUPPORT, 2° TO 5° ANG. (LARGE CONDUCTORS)

Scale: 1/2"=1'-0

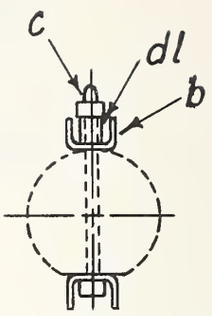
Date: Nov. 25, 1947

C1-3

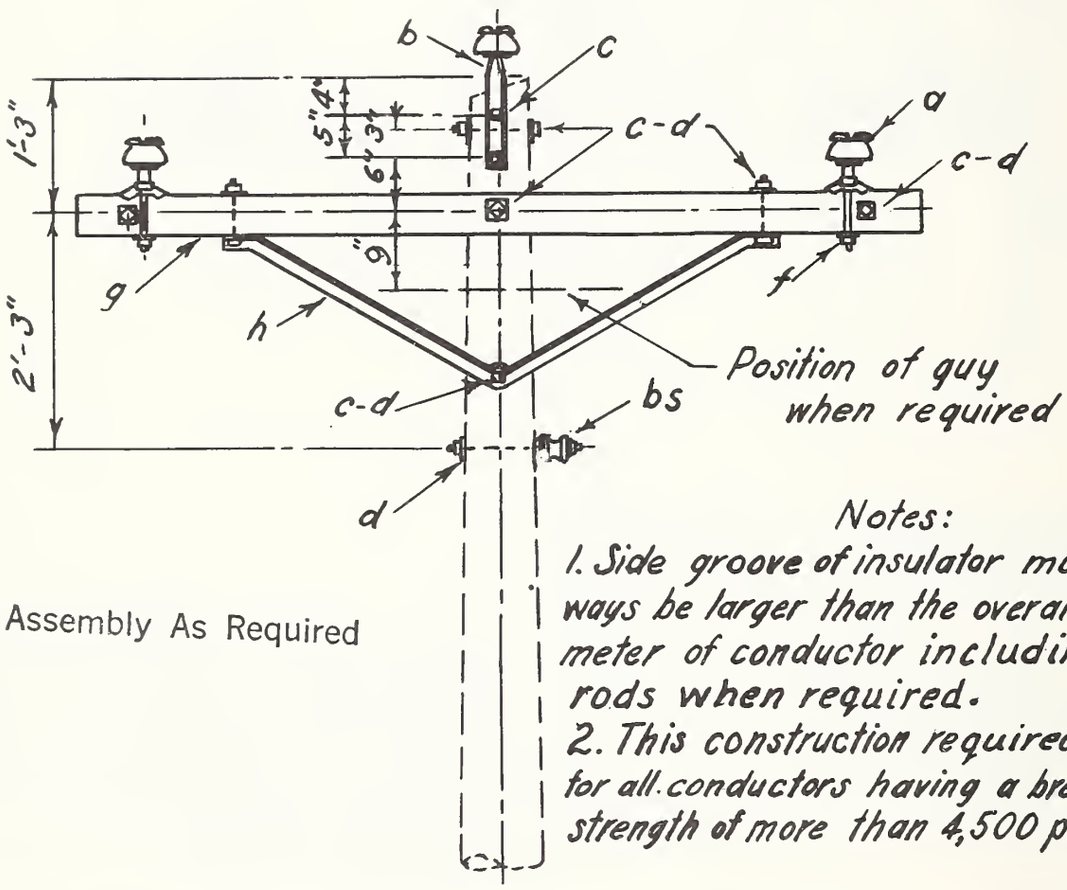
No.	REVISION	DATE
1	Reissued	8-56



PLAN



POLE TOP PIN ASSEMBLY



Add Ground Assembly As Required

Notes:

1. Side groove of insulator must always be larger than the overall diameter of conductor including armor rods when required.
2. This construction required for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
a	4	Insulator, pin type		g	1	Crossarm, 3¾"x4¾"x8'-0"	
b	2	Pin, pole top, 15"		h	1	Brace, 1½"x1½"x3/16", 60" span	
c	7	Bolt, machine, ⅝"x req'd. length		bs	1	Bolt, single upset, insulated	
d	10	Washer, 2¼"x2¼"x3/16", 13/16" hole		c	2	Bolt, machine, ½"x req'd. length	
f	2	Pin, crossarm, clamp type		d	2	Washer, rd., 1⅜" diam., 3/16" hole	
dl	2	Pipe spacer, ¾" dia. x 1½"					

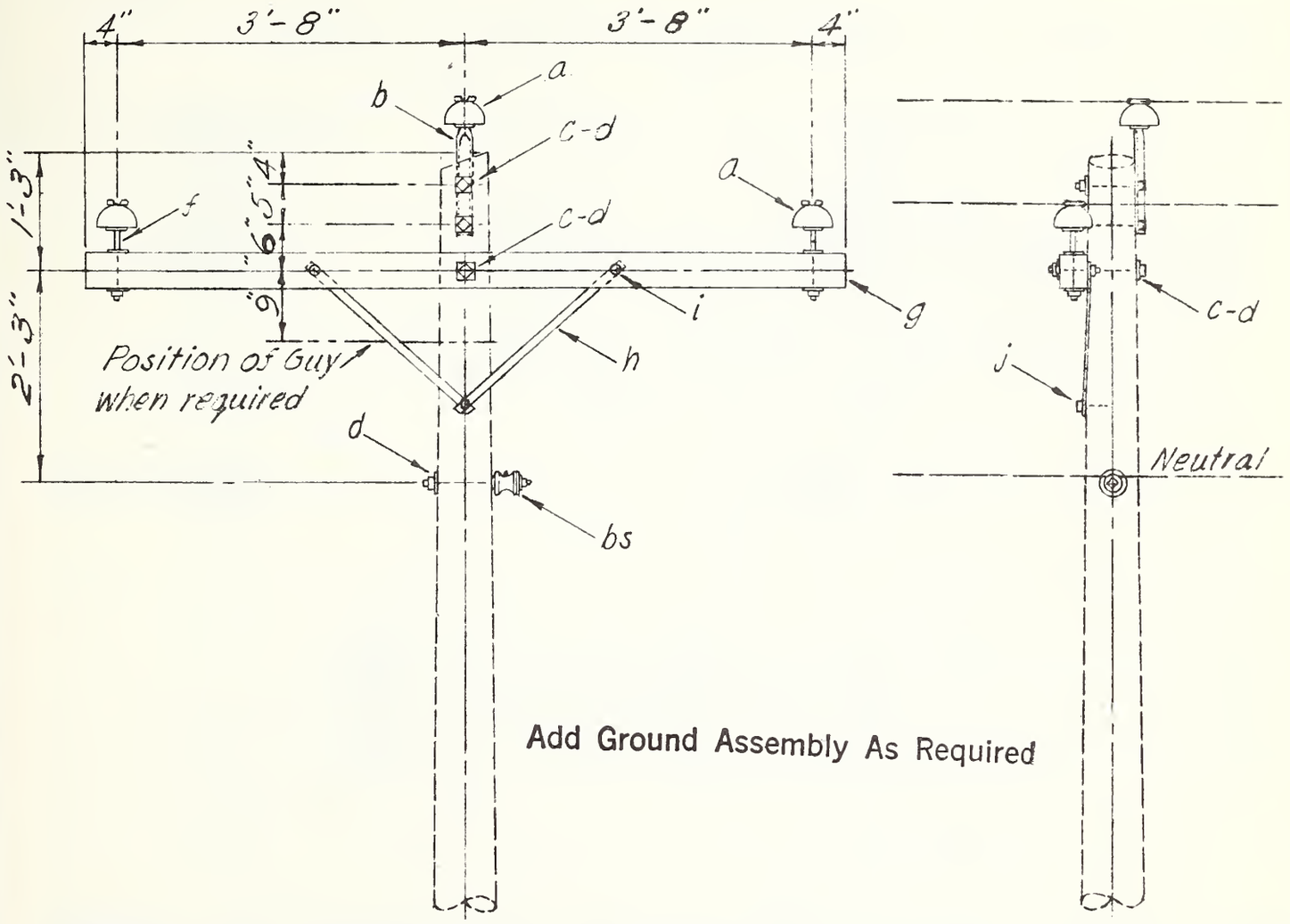
7.2/12.5 KV. PRIMARY, 3-PHASE, 4-WIRE STAR CROSSARM CONSTRUCTION-0° TO 2° ANGLE (LARGE CONDUCTORS)

Scale: ½"=1'-0"

Date: Jan. 4, 1949

C1-4

No.	REVISION	DATE
1	Reissued	8-56



Add Ground Assembly As Required

NOTE:
This assembly may be used for conversion units when considered applicable.

ITEM	NO. REQD.	MATERIAL		ITEM	NO. REQD.	MATERIAL	
a	3	Insulator, pin type		h	2	Brace, flat, 1¼" x ¼" x 28"	
b	1	Pin, pole top, 15"		i	2	Bolt, carriage, ⅜" x 4½"	
c	3	Bolt, machine, ⅝" x req'd. length		j	1	Screw, lag, ½" x 4"	
d	5	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		bs	1	Bolt, single upset, insulated	
f	2	Pin, crossarm, steel, ⅝" x 10¾"					
g	1	Crossarm, 3½" x 4½" x 8'-0					

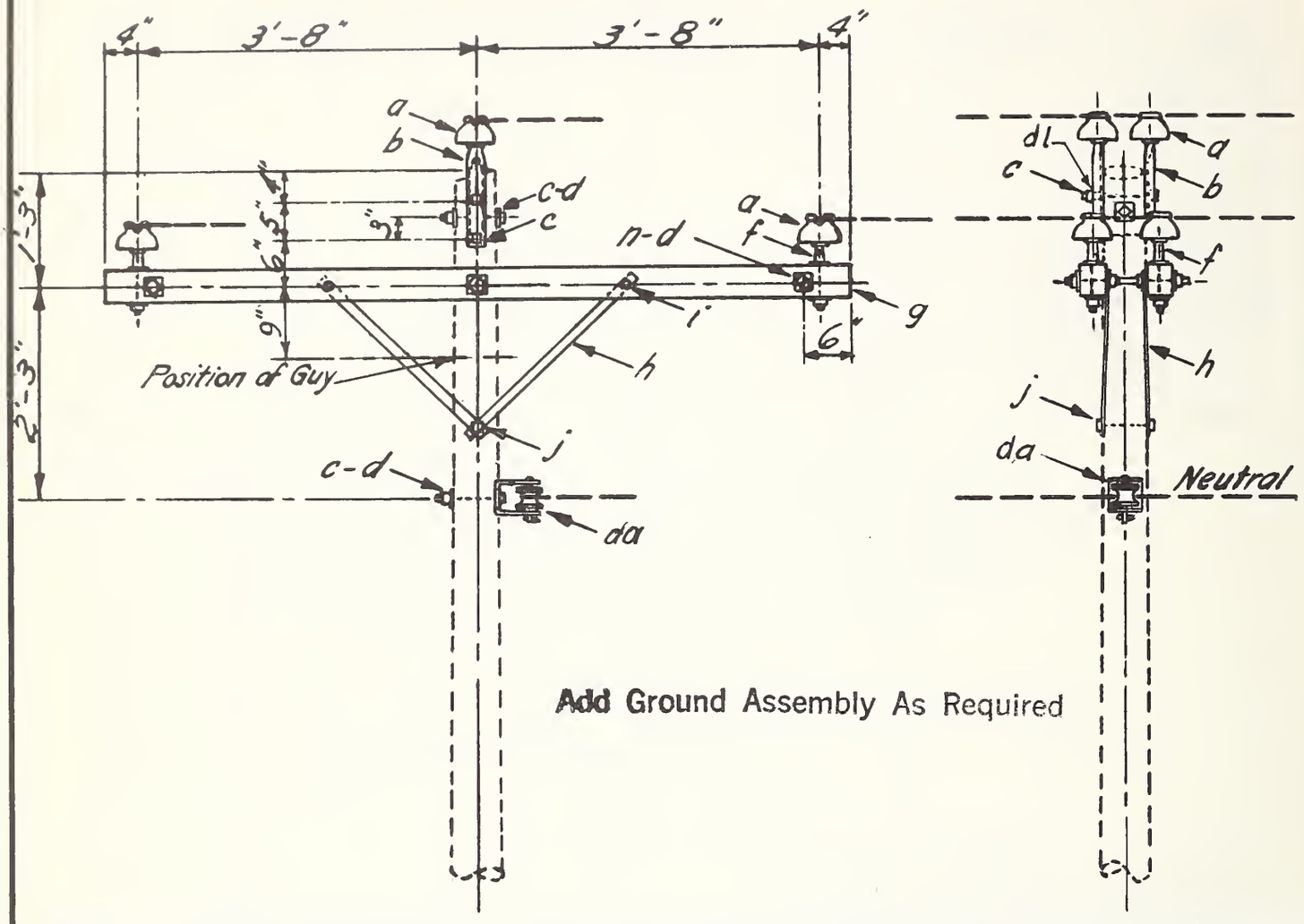
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTR.-SINGLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

Scale: ½" = 1'-0"

Date: July, 17, 1951

C1-7

NO.	REVISION	DATE:
1	Reissued	8-56



NOTE :- When the transverse load is more than 500 pounds per pin, substitute C2-1 or C2-2 as required.

ITEM	Nº REQ'D	MATERIAL		ITEM	Nº REQ'D	MATERIAL	
a	6	Insulator, pin type		h	4	Brace, 1¼" x ¼" x 28"	
b	2	Pin, pole top, 15"		i	4	Bolt, carriage, ⅜" x 4½"	
c	5	Bolt, machine, ⅝" x req'd. length		j	2	Screw, lag, ½" x 4"	
d	13	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		n	2	Bolt, double arming, ⅝" x req'd. length	
f	4	Pin, crossarm, steel, ⅝" x 10¾"		da	1	Bracket, insulated	
g	2	Crossarm, 3½" x 4½" x 8'-0"		dl	2	Pipe spacer, ¾" dia. x 1½"	

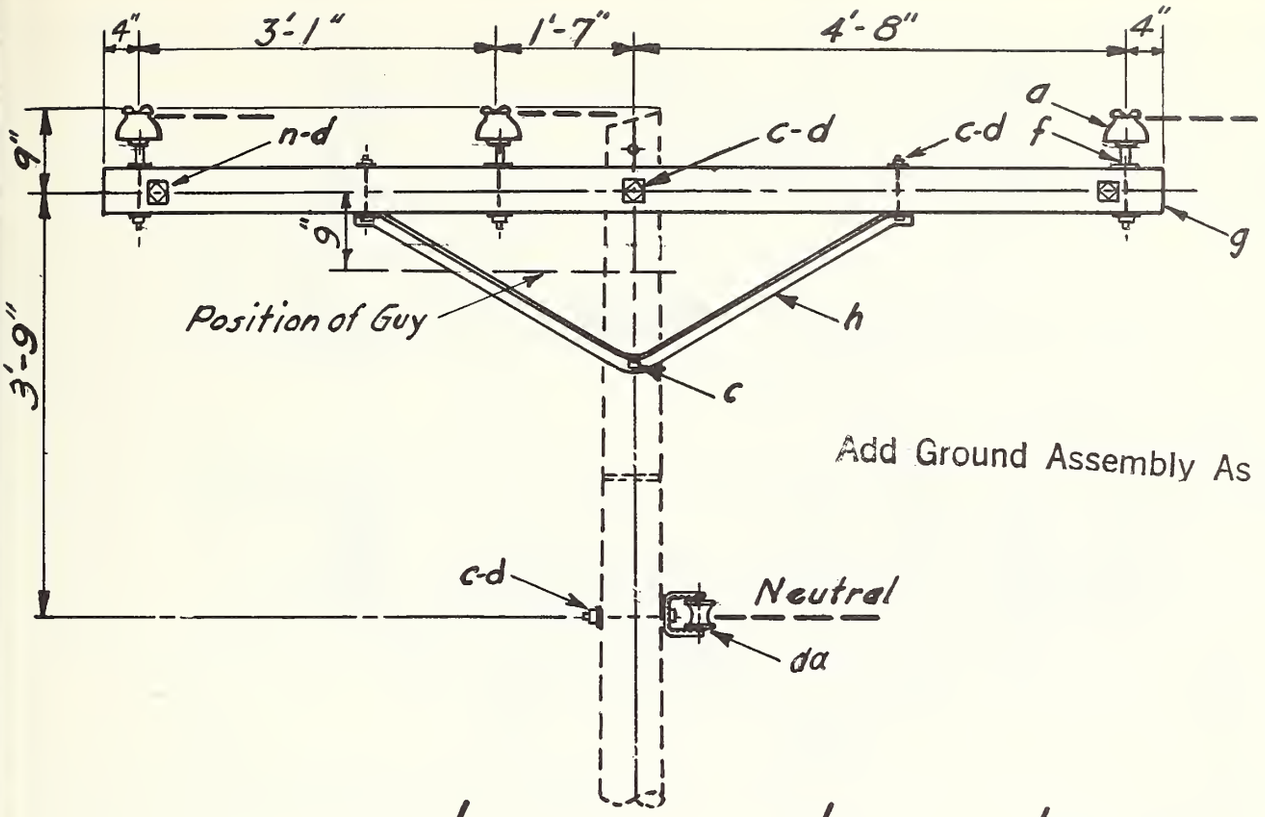
NO	REVISION	DATE
1	Reissued	8-56

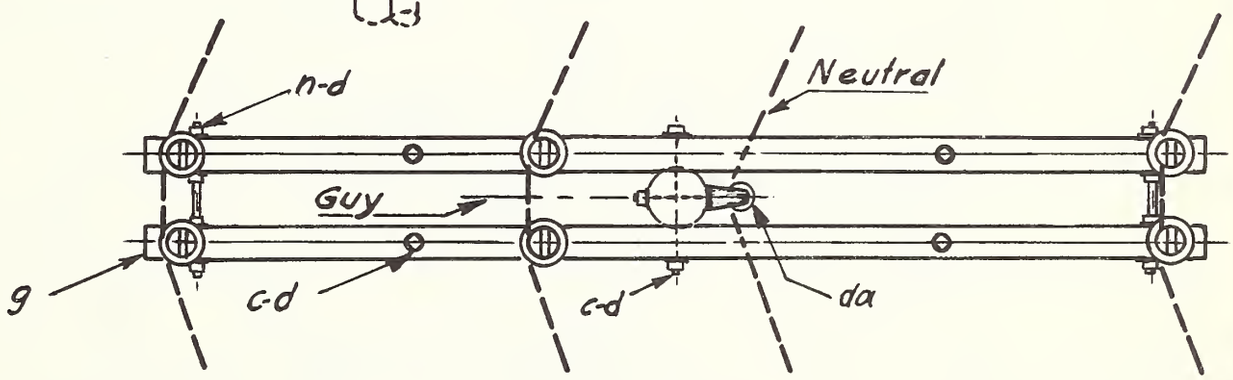
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTR.- DOUBLE PRIMARY SUPPORT AT 5° TO 30° ANGLE

Scale: ½" = 1'-0"

Date:

C2





PLAN

NOTES: Center phase wire or neutral wire may be located on the opposite side of the pole where necessary to avoid crossing of wires in midspan. Neutral may also be mounted on the crossarm.

When the transverse load is more than 500 pounds per pin, install a 2¼"×2¼"×3/16" washer on the top of the crossarm for each pin. If the load is more than 750 pounds, use construction shown on C2-2.

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	6	Insulator, pin type		c	4	Bolt, machine ½" × req'd length	
c	3	Bolt, machine 5/8" × req'd. length		d	4	Washer, rd., 1 3/8" diam, 9/16" hole	
d	11	Washer, 2¼"×2¼"×3/16", 13/16" hole		n	2	Bolt, double arming ⅝" × req'd. length	
f	6	Pin, crossarm, steel 5/8"×10 3/4"		da	1	Bracket, insulated	
g	2	Crossarm 3 3/4"×4 3/4"×10'-0"					
h	2	Brace, 1½"×1½"×3/16" Angle, 60" Span					

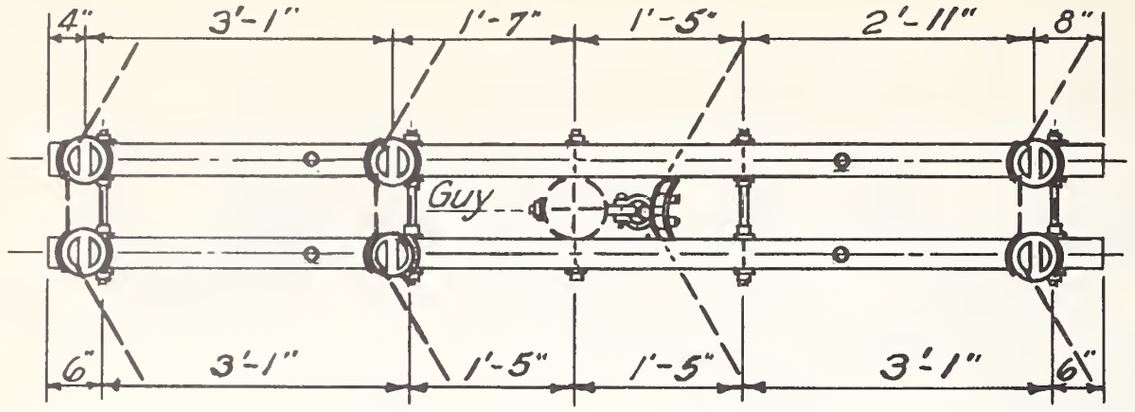
7.2/12.5KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION-5°TO30° ANGLE

Nº	REVISION	DATE
1	Reissued	8-56

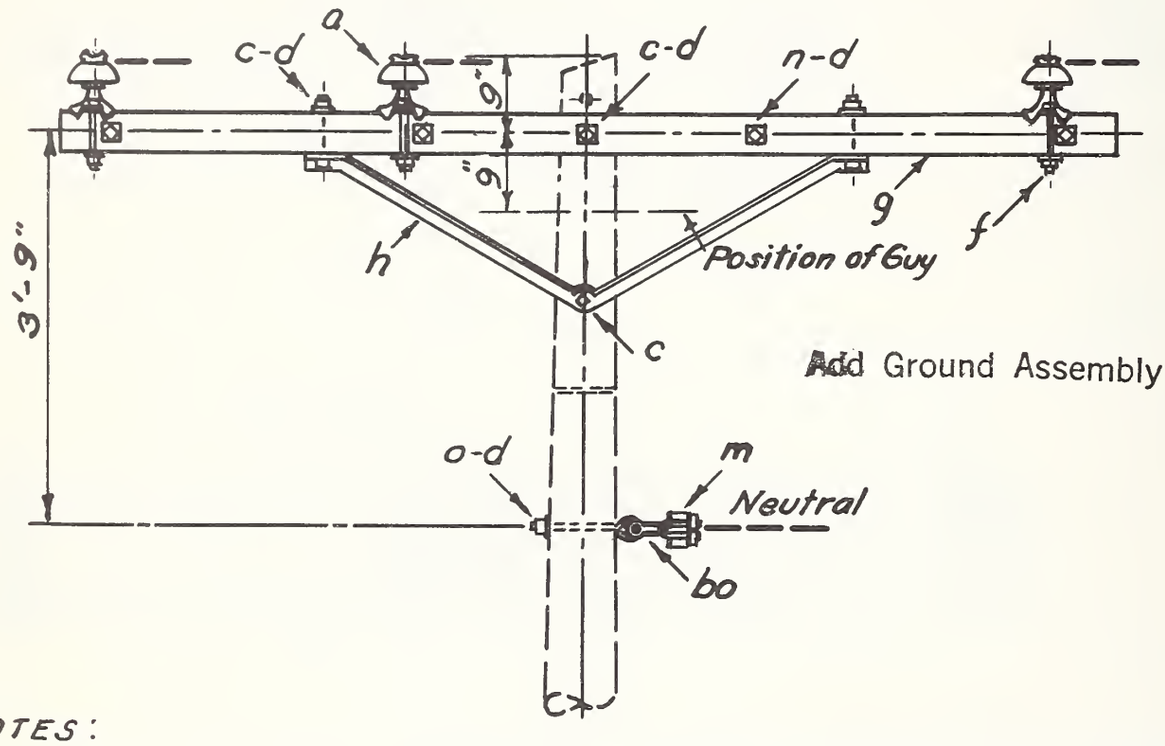
Scale: ½" = 1'-0"

Date:

C2-1



PLAN



Add Ground Assembly As Required

NOTES:

1. Side groove of insulator must always be larger than the overall diameter of conductor including armor rods when required.
2. Center phase wire or neutral wire may be located on the opposite side of the pole where necessary to avoid crossing of wires in midspan.
3. If transverse load on insulator pins is more than 1500 pounds each, substitute "VERTICAL CONSTRUCTION" - 30° TO 60° ANGLE ASSEMBLY"
4. This construction required for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	6	Insulator, pin type	g	2	Crossarm, 3 3/4 x 4 3/4" x 10'-0"
c	2	Bolt, machine, 5/8" x req'd. lgth.	h	2	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60° sp.
c	4	Bolt, machine, 1/2" x req'd. lgth.	m	1	Clamp, suspension, 2 bolt
d	19	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	n	4	Bolt, double arming, 5/8" x req'd. lgth.
d	4	Washer, rd., 1 3/8" diam, 9/16" hole	o	1	Bolt, eye, 5/8" x req'd. length
f	6	Pin, crossarm, steel, clamp type	bo	1	Shackle, anchor

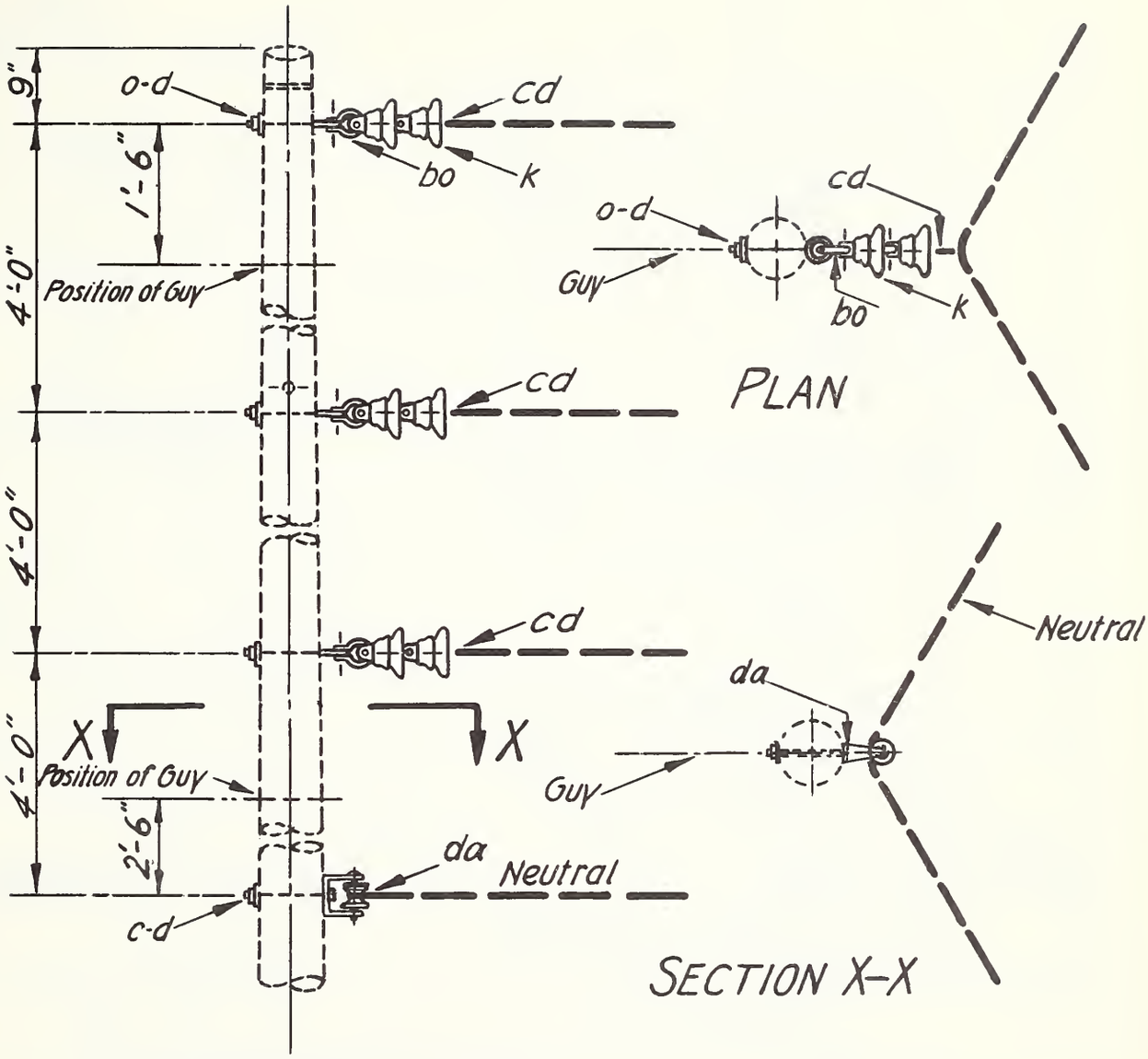
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION, 5° TO 30° ANGLE (LARGE CONDUCTORS)

Scale: 1/2" = 1'-0"

Date: Mar. 25, 1947

C2-2

No.	REVISION	DATE
1	Reissued	B-56



This assembly may be used for angles 20° to 30° with all conductors having a breaking strength of 4500 pounds or more.

Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
d	4	Washer, 2¼"×2¼"×3/16", 13/16" hole		cd	3	Angle assembly, primary	
k	6	Insulator, suspension		da	1	Bracket, insulated	
o	3	Bolt, eye, 5/8"× req'd. length		c	1	Bolt, machine, 5/8"× req'd. length	
bo	3	Shackle, anchor					

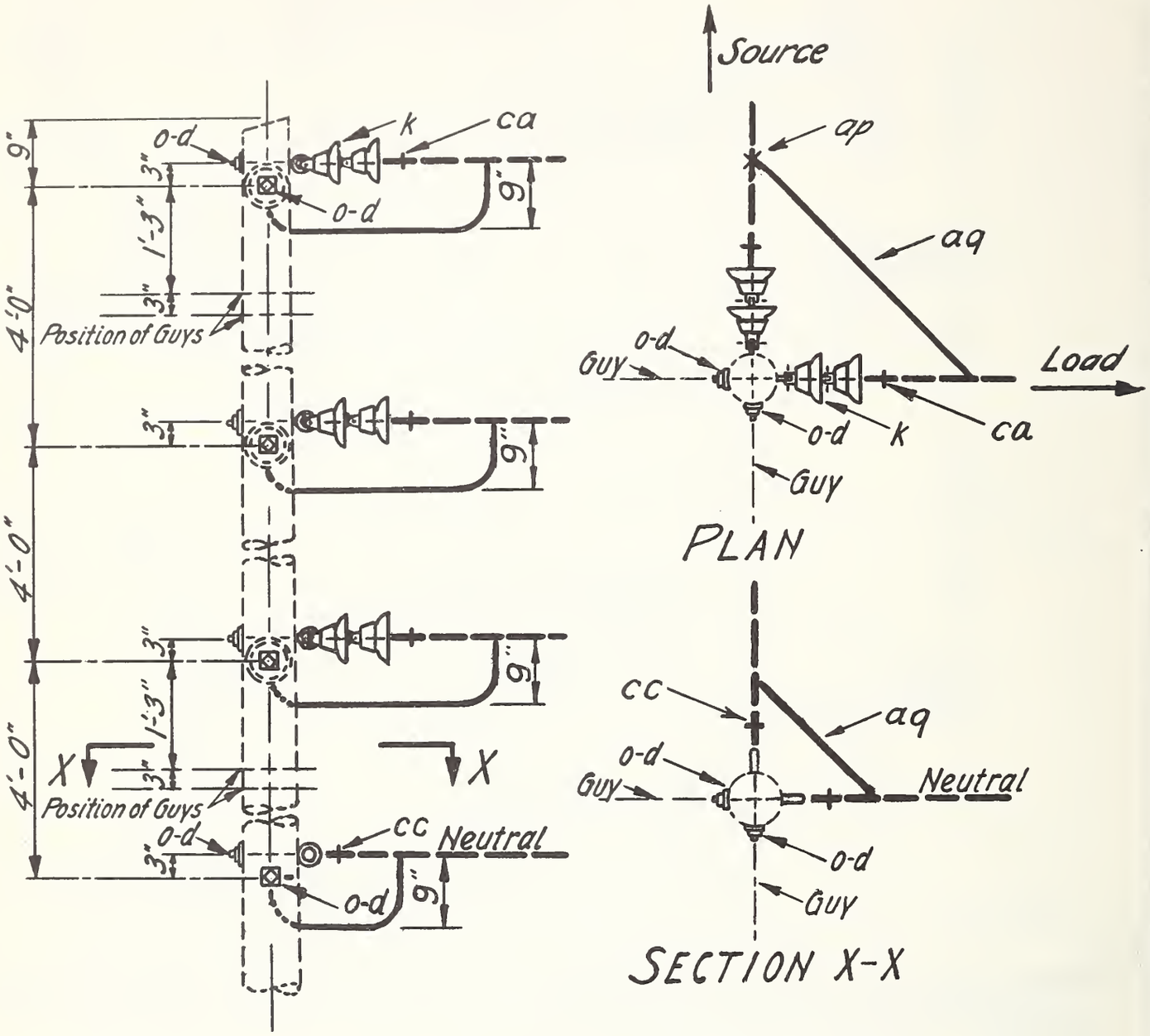
1	Reissued	8-56
No.	REVISION	Date

7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
VERTICAL CONSTRUCTION–30° TO 60° ANGLE

Scale: ½"=1'-0"

Date:

C3



Add Ground Assembly As Required

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
d	8	Washer, 2¼" × 2¼" × 3/16", 13/16" hole		o	8	Bolt, eye, 5/8" × req'd. length	
k	12	Insulator, suspension		ca	6	Deadend assembly, primary	
aq		Jumpers		cc	2	Deadend assembly, neutral	
p		Connectors, as req'd.					
ap	3	Clamp, hot line, tap assembly					

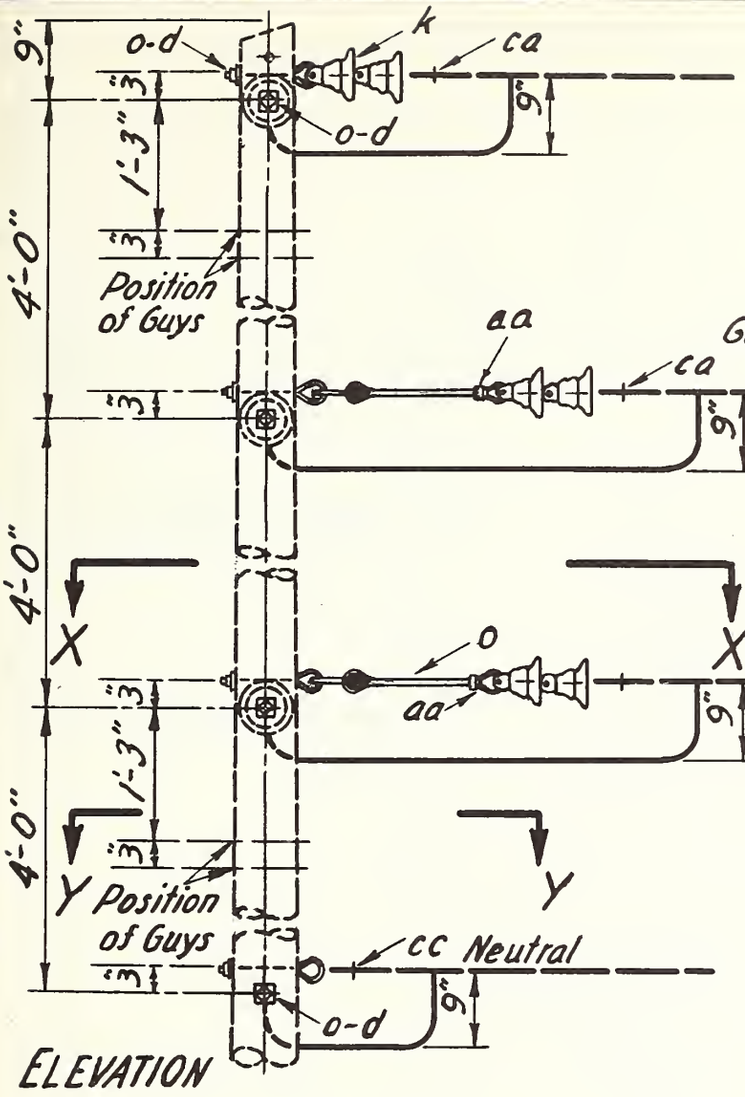
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
VERTICAL CONSTRUCTION – 60° TO 90° ANGLE

NO.	REVISION	DATE:
1	Reissued	8-56

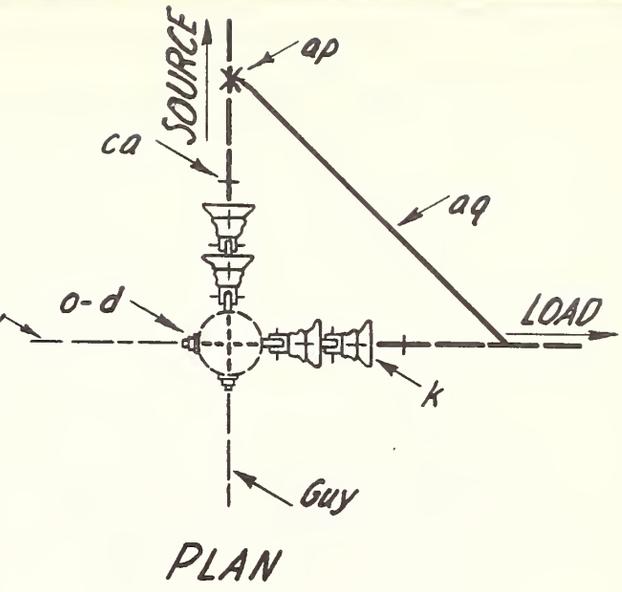
Scale: 1½" = 1'0"

Date:

C4

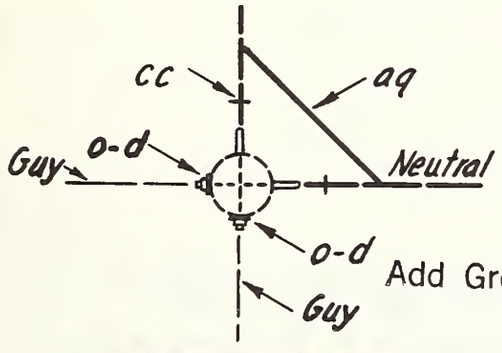


ELEVATION



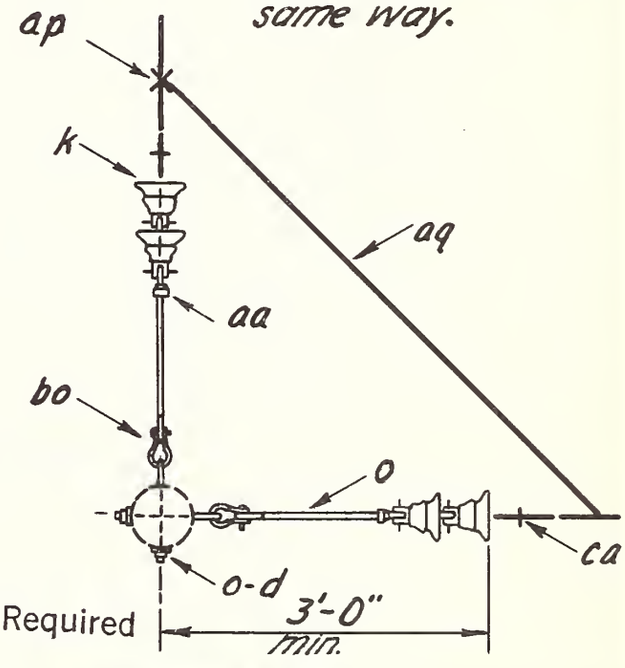
PLAN

Other similiar assemblies may be constructed in the same way.



SECTION Y-Y

Add Ground Assembly As Required



SECTION X-X

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
d	8	Washer, 2 1/4" x 2 1/4" x 3/16," 13/16" hole		ap	3	Clamp, hot line, tap assembly	
k	12	Insulator, suspension		aq		Jumpers	
				bo	4	Shackle, anchor	
o	12	Bolt, eye, 5/8" x required length		ca	6	Deadend assembly, primary	
p		Connectors, as required		cc	2	Deadend assembly, neutral	
aa	4	Nut, eye 5/8"					

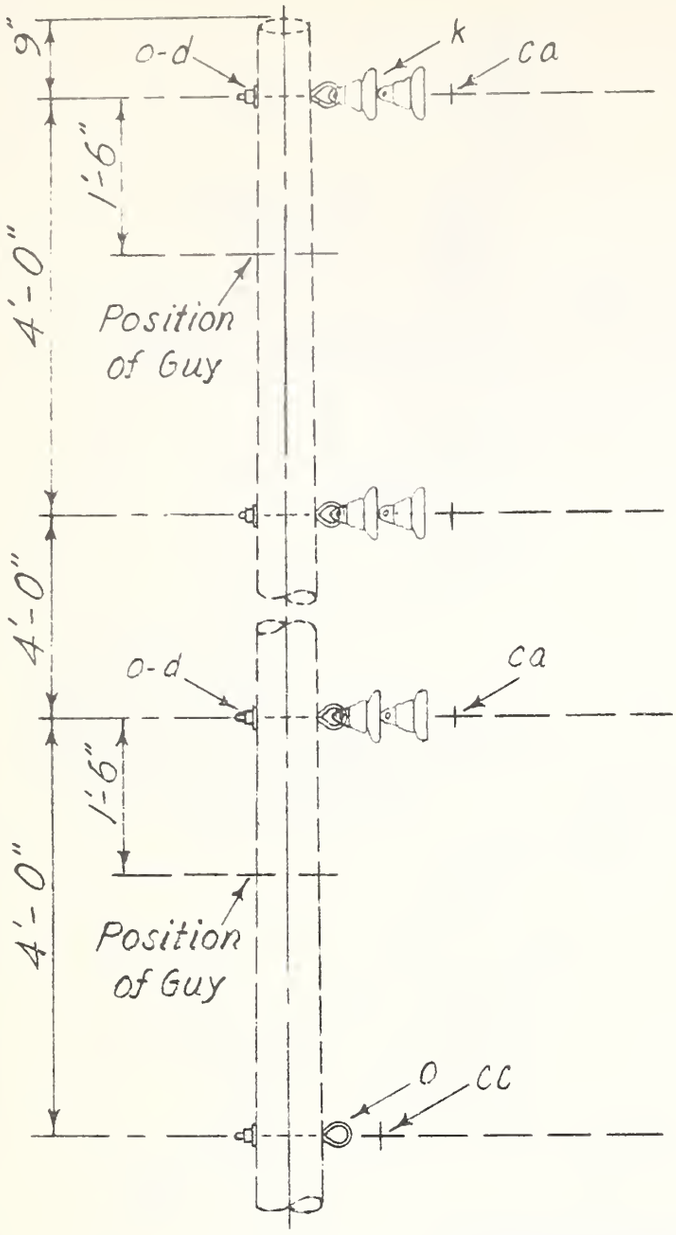
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR VERTICAL CONSTRUCTION-60 TO 90° ANGLE

NO.	REVISION	Date
1	Reissued	8-56

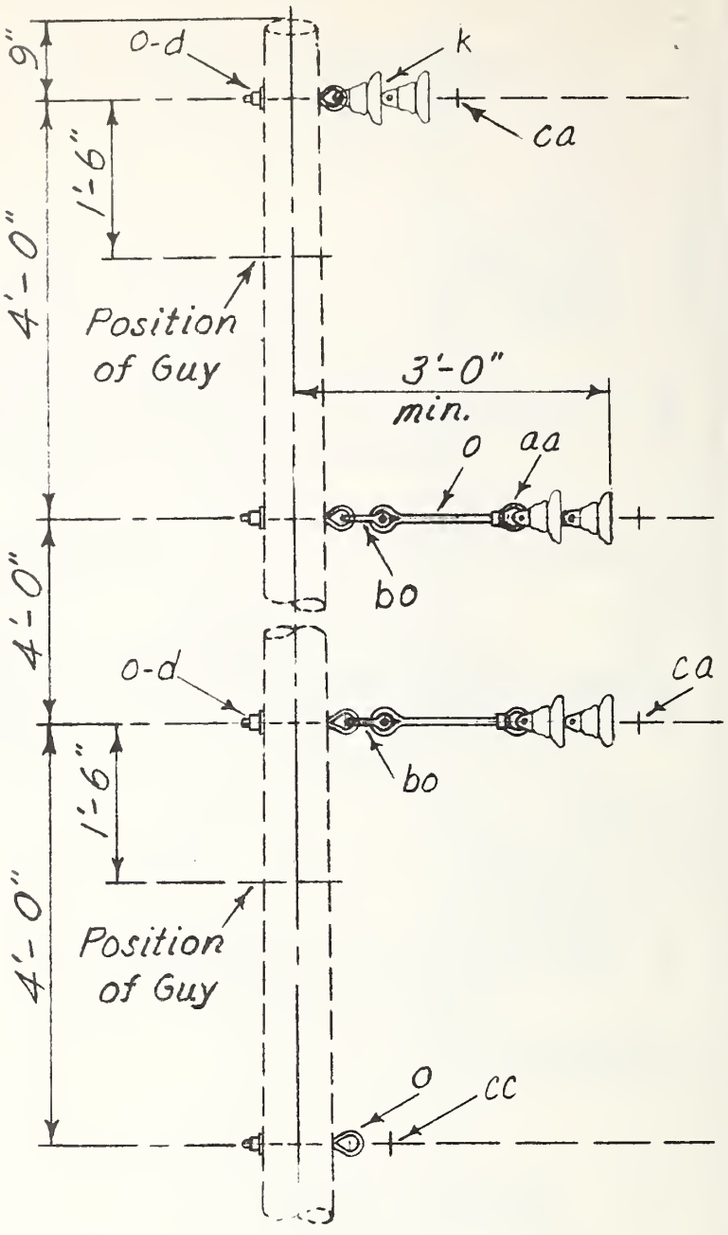
Scale: 1/2" = 1'-0"

Date: July 17, 1948

C4-1



C 5



C5-1

Add Ground Assembly As Required

		ASSEMBLY UNIT		
		C 5	C5-1	
ITEM	MATERIAL	No. REQ'D.	No. REQ'D.	
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	4	4	
k	Insulator, suspension	6	6	
o	Bolt, eye, 5/8" x req'd. length	4	6	
aa	Nut, eye, 5/8"		2	
ca	Deadend assembly, primary	3	3	
cc	Deadend assembly, neutral	1	1	
bo	Shackle, anchor		2	

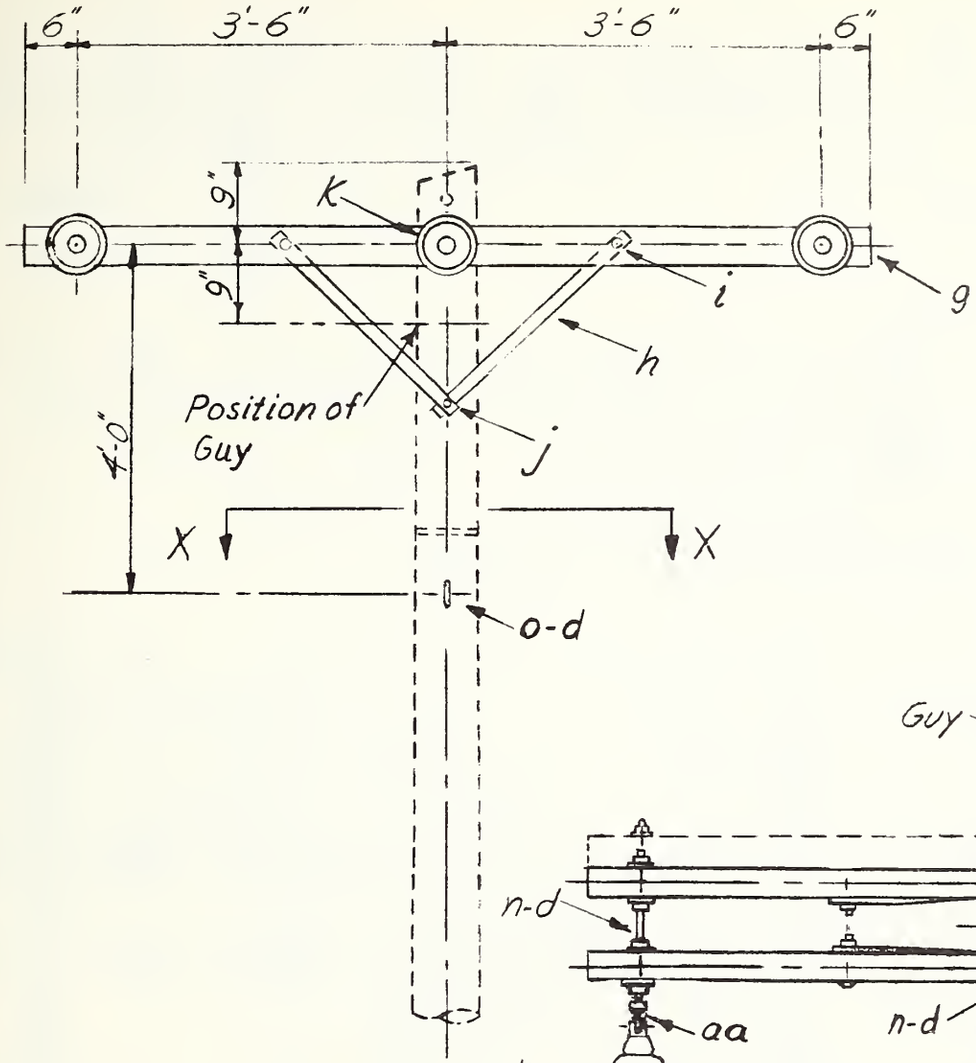
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
VERTICAL CONSTRUCTION - DEADEND (SINGLE)

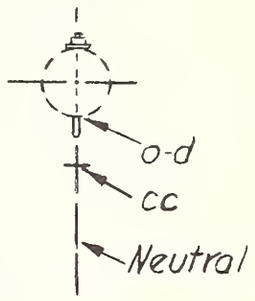
Scale: 1/2" = 1'-0"

Date: Nov. 3, 1955

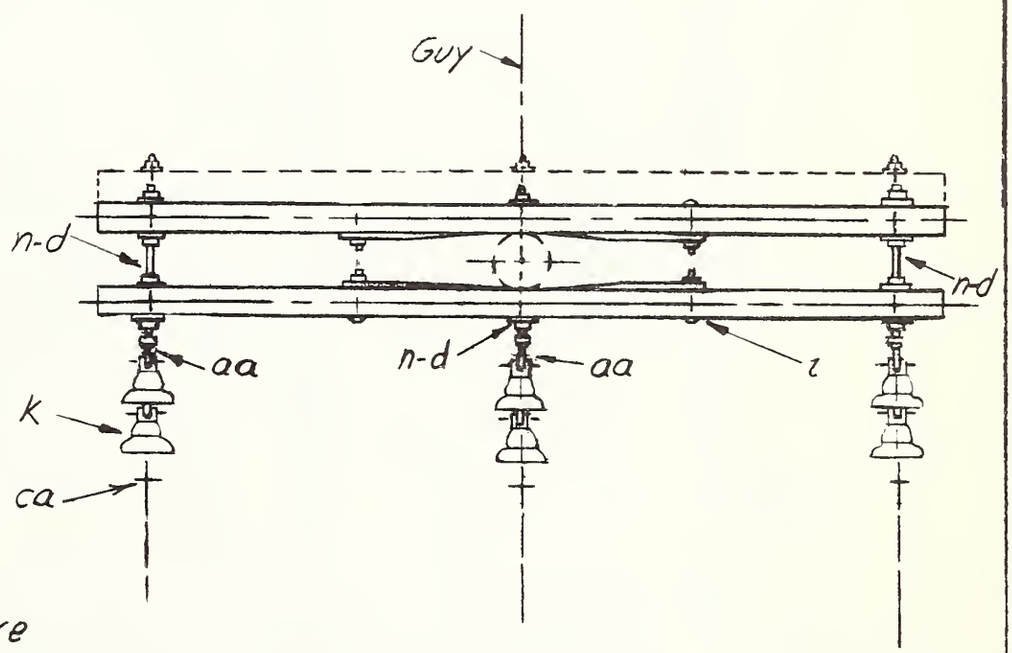
C5, C5-1

No.	REVISION	Date:





SECTION X-X



PLAN

Add Ground Assembly As Required

Notes:

1. *When crossarm guys are required refer tc drawing E5-1*
2. *Designate as C7-1 for assembly with three crossarms.*

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
o	1	Bolt, eye, $\frac{5}{8}$" × req'd length		K	6	Insulator, suspension	
d	11	Washer, 2¼" × 2¼" × $\frac{3}{16}$", $\frac{13}{16}$" hole		ca	3	Deadend assembly, Primary	
g	2	Crossarm, 3½" × 4½" × 8'-0"		n	3	Bolt, double arming, $\frac{5}{8}$" req'd. length	
h	4	Brace, 1¼" × ¼" × 28"		aa	3	Nut, eye, $\frac{5}{8}$"	
i	4	Bolt, carriage, $\frac{3}{8}$" × 4½"		cc	1	Deadend assembly, Neutral	
j	2	Screw, lag, ½" × 4"					

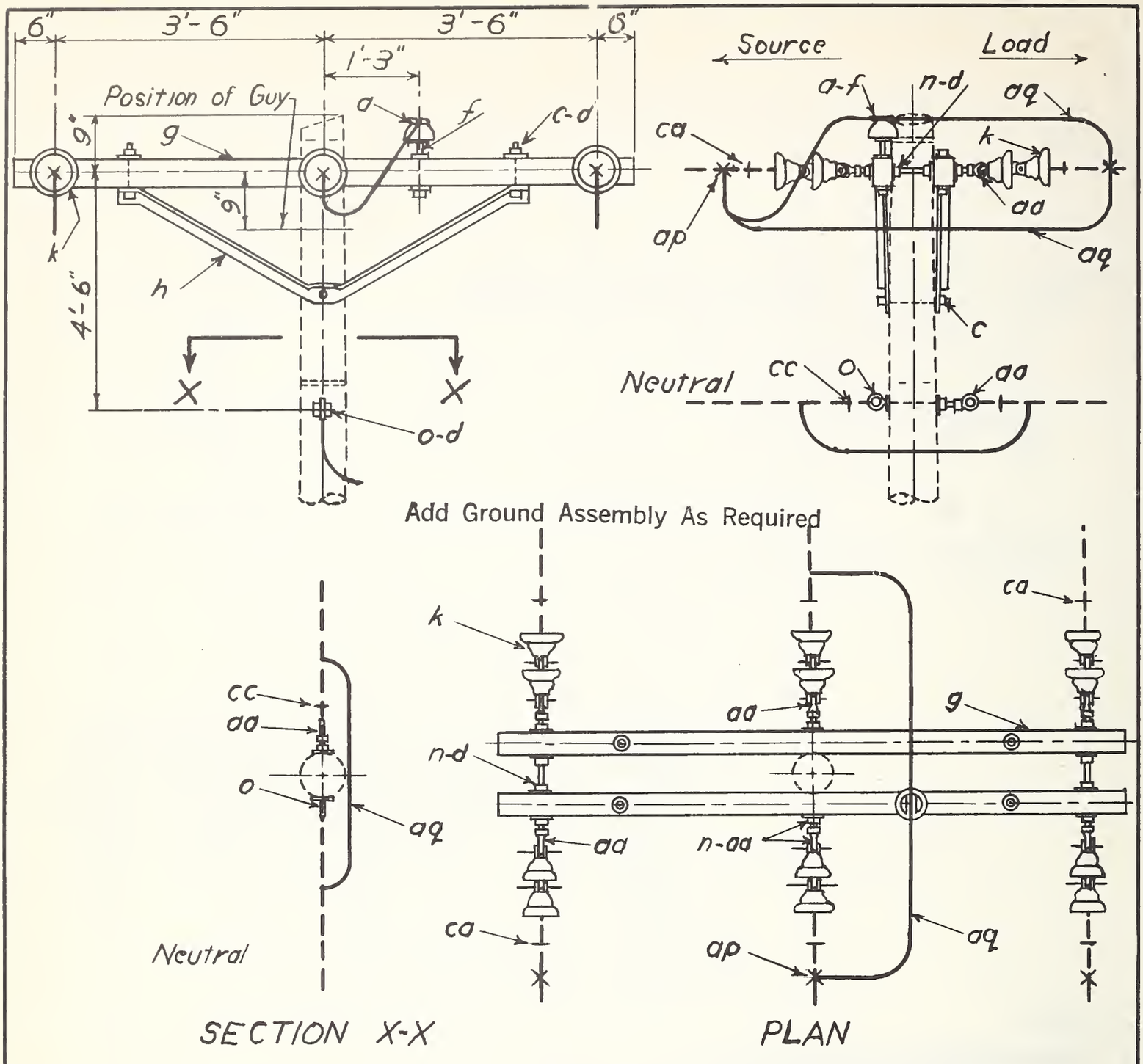
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION-DEAD END (SINGLE)

No.	REVISION	Date
1	Revised	11-3-55

Scale: ½" = 1'-0"

Date: Apr. 12, 1949

C7, C7-1



ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
a	1	Insulator, pin type		n	3	Bolt, double arming, 5/8" x req'd length	
c	1	Bolt, machine, 5/8" x req'd length		o	1	Bolt, eye, 5/8" x req'd length	
c	4	Bolt, machine, 1/2" x req'd length		p		Connectors, as req'd	
d	12	Washer, 2 1/4" x 2 1/4" x 3/16", 1 3/16" hole		aa	7	Nut, eye, 5/8"	
d	4	Washer, round, 1 3/8" diam. 9/16" hole		ap	3	Clamp, hot line, tap assembly	
f	1	Pin, crossarm, steel, 5/8" x 10 3/4"		aq		Jumpers and leads as req'd	
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"		ca	6	Deadend assembly, primary	
h	2	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60" span		cc	2	Deadend assembly, neutral	
k	12	Insulators, suspension					

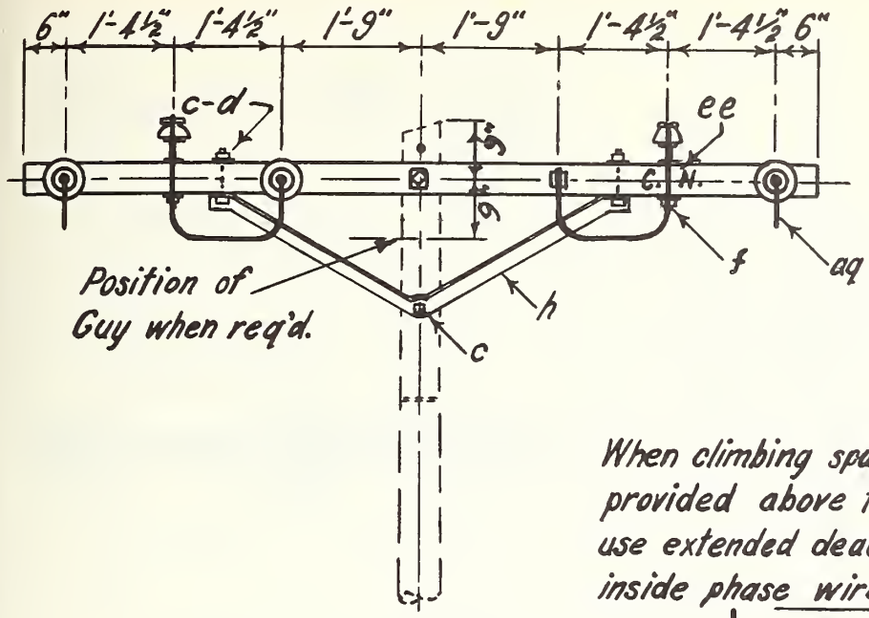
7.2/12.5 KV. PRIMARY, 3-PHASE, 4-WIRE STAR CROSSARM CONSTRUCTION, DEADEND (DOUBLE)

No.	REVISION	Date:
1	Reissued	8-56

Scale: 1/2"=1'-0"

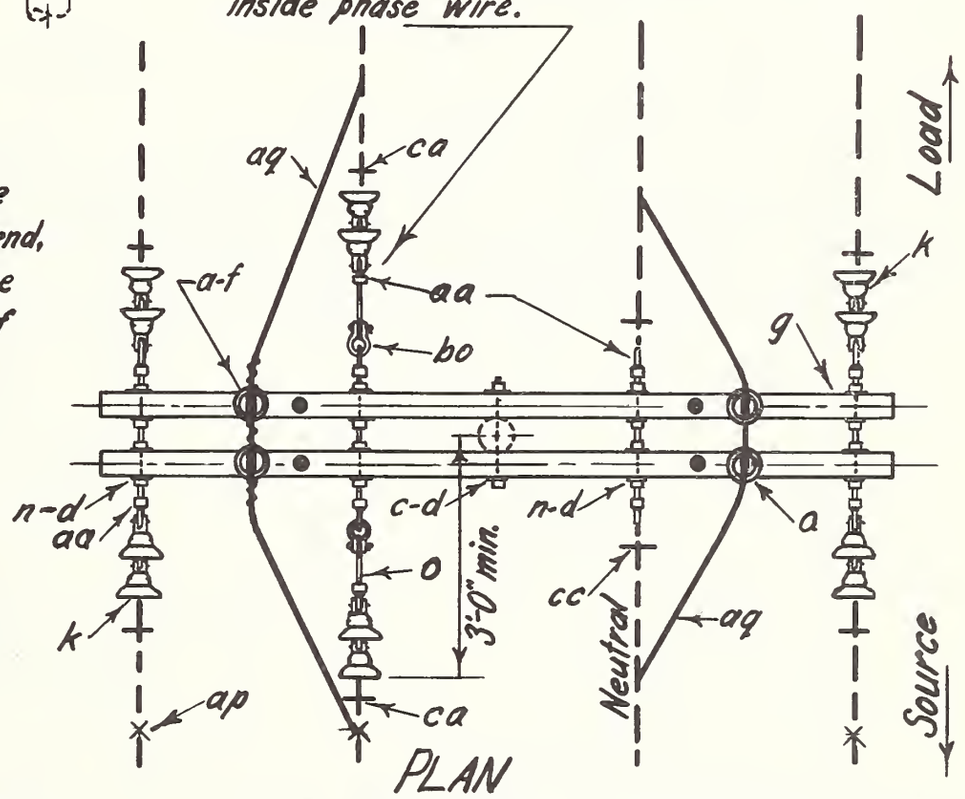
Date: Apr. 12, 1949

C8



Add Ground Assembly As Required

When climbing space must be provided above these conductors use extended deadends on the inside phase wire.



PLAN

NOTE:

When the line may be energized from either end, hot line clamps should be installed on both ends of the jumpers.

ITEM	No. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
a	4	Insulator, pin type		n	4	Bolt, double arming, 5/8" x req'd. length	
c	2	Bolt, machine, 5/8" x req'd. length		p		Connectors, as req'd.	
c	4	Bolt, machine, 1/2" x req'd. length		bo	2	Shackle, anchor	
d	18	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		o	2	Bolt, eye, 5/8" x required length	
d	4	Washer, round, 1 3/8" dia., 3/16" hole		aa	10	Nut, eye, 5/8"	
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"		ap	3	Clamp, hot line, tap assembly	
g	2	Crossarm, 3¾" x 4¾" x 10'-0"		aq		Jumpers and leads as req'd.	
h	2	Brace, angle, 1½" x 1½" x 3/16", 60" span		ca	6	Deadend assembly, primary	
k	12	Insulator, suspension		cc	2	Deadend assembly, neutral	
				ee	2	Letters "C.N.", 2", with 1" nails	

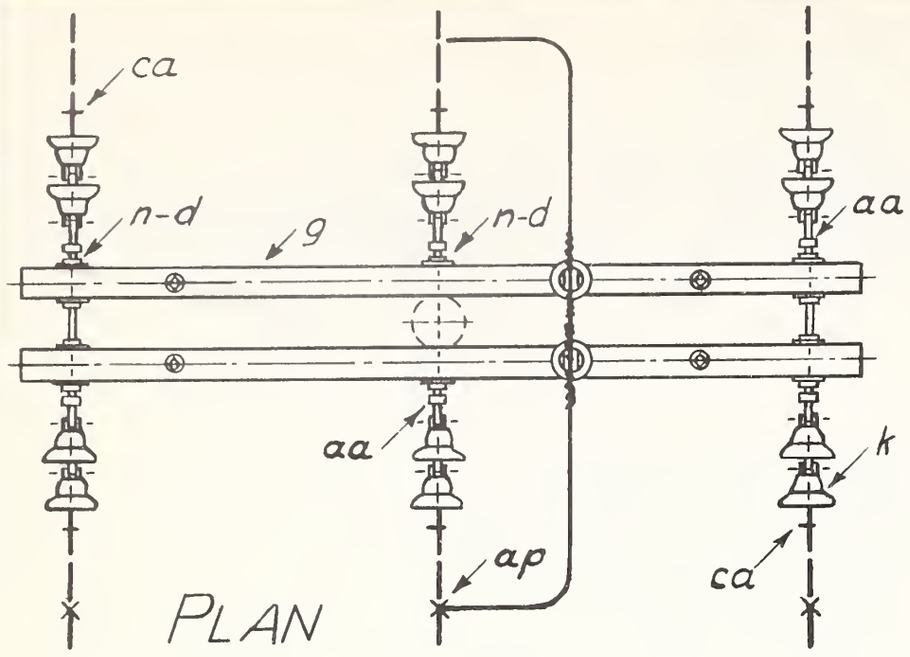
7.2/12.5 KV. PRIMARY, 3-PHASE, 4-WIRE STAR CROSSARM CONSTRUCTION-DEADEND (DOUBLE)

Scale: 3/8" = 1'-0"

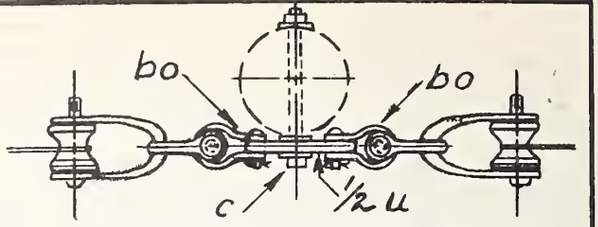
Date: Feb. 8, 1949

C8-1

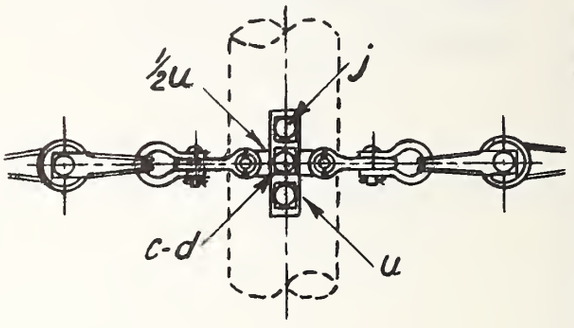
No.	REVISION	DATE
1	Reissued	8-56



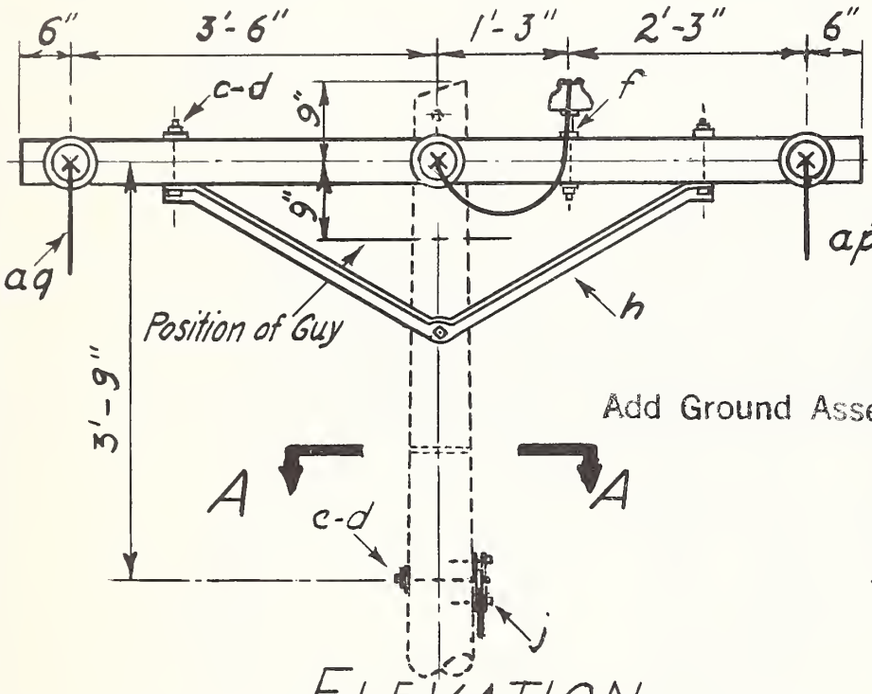
PLAN



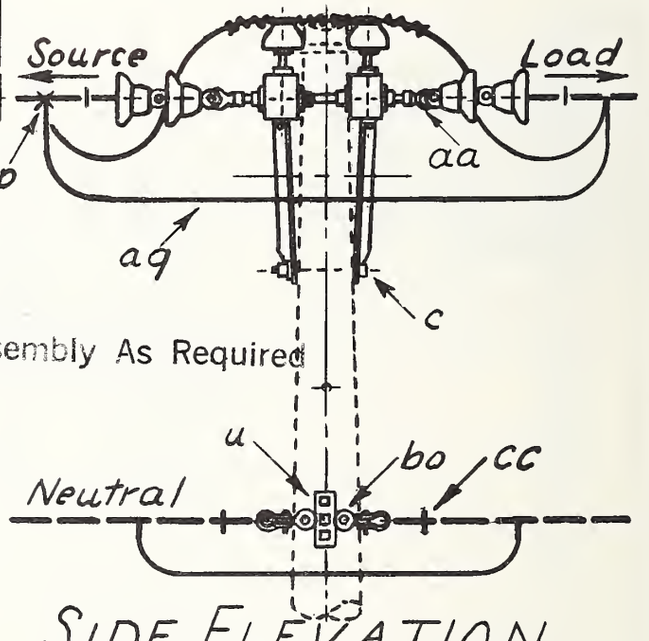
SECTION A-A
Scale: 1"=1'-0"



ELEVATION



ELEVATION



Add Ground Assembly As Required

SIDE ELEVATION

ITEM	No. REQD	MATERIAL		ITEM	No. REQD	MATERIAL	
a	2	Insulator, pin type		n	3	Bolt, doublearming, 5/8" x req'd lgth.	
c	2	Bolt, machine, 5/8" x req'd. lg'th.		p		Connectors, as req'd.	
c	4	Bolt, machine, 1/2" x req'd. lg'th.		u	1½	Clamp, guy, 6" - Heavy duty	
d	11	Washer, 2¼"x2¼" x 3/16", 13/16" hole		aa	6	Nut, eye, 5/8"	
d	4	Washer, rd, 1 3/8" dia, 9/16" hole		ap	3	Clamp, hot line, tap assembly	
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"		aq		Jumpers	
g	2	Crossarm, 3¾" x 4¾" x 8'-0"		bo	4	Shackle, anchor	
h	2	Brace, angle, 1½" x 1½" x 3/16", 60" span		ca	6	Deadend assembly, primary	
j	2	Screw, Lag, ½" x 4"		cc	2	Deadend assembly, neutral	
k	12	Insulator, suspension					

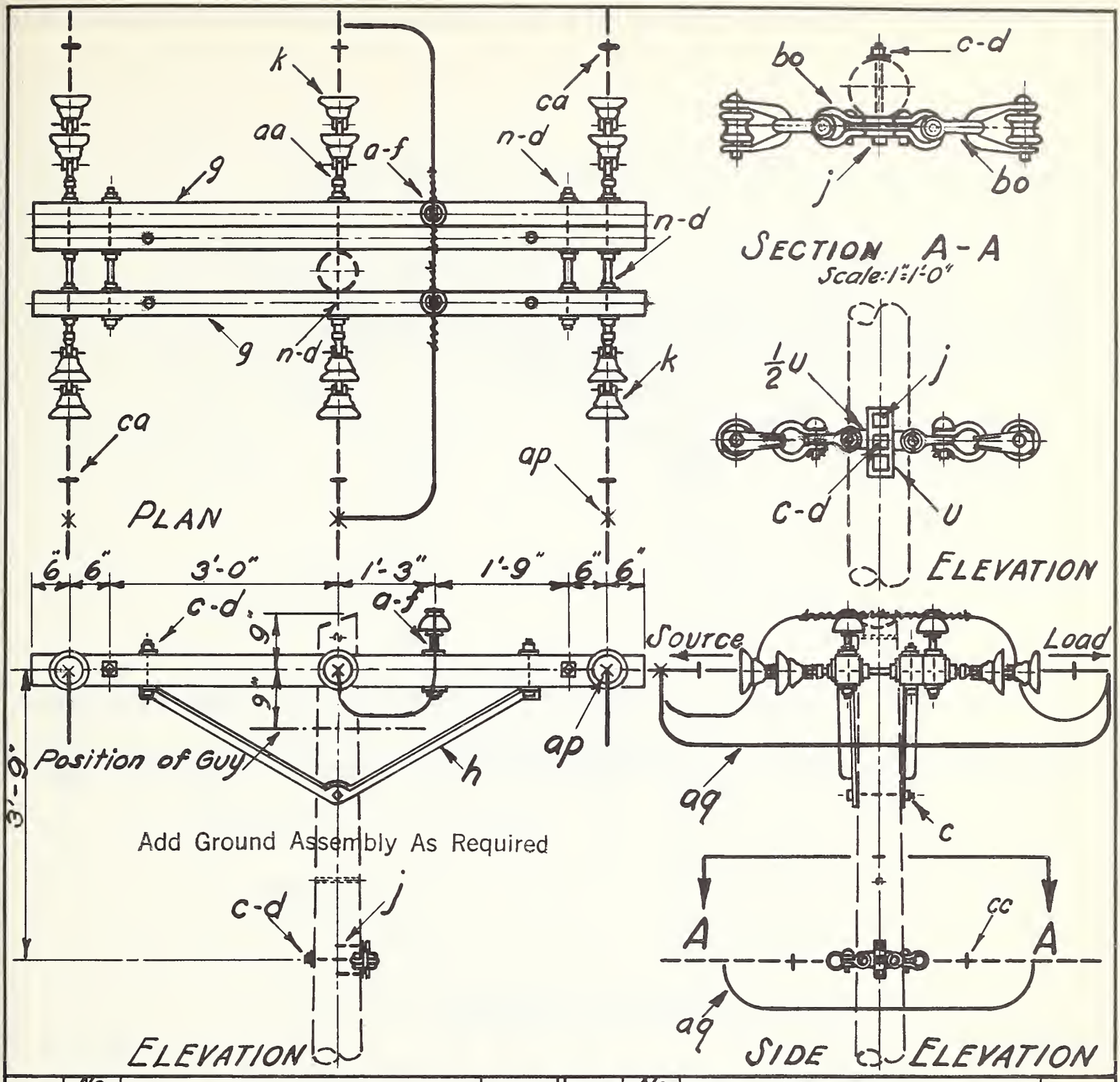
7.2/12.5 Kv. Primary, 3-Phase 4-Wire Star Crossarm Construction - Deadend (Double) (Large Conductors)

No.	Revision	Date
1	Reissued	8-56

Scale: ½" = 1'-0"

Date: Nov. 25, 1947

C8-2



ITEM	No. REQ'D	MATERIAL
a	2	Insulator, pin type
c	2	Bolt, machine, 5/8" x req'd. length
c	4	Bolt, machine, 1/2" x req'd. length
d	19	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
d	4	Washer, rd, 1 3/8" diam, 9/16" hole
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"
g	3	Crossarm, 3 3/4" x 4 3/4" x 8'-0"
h	2	Brace, 1 1/2" x 1 1/2" x 3/16" 60" span
j	2	Screw, lag, 1/2" x 4"
k	12	Insulator, suspension

ITEM	No. REQ'D	MATERIAL
n	5	Bolt, double arming, 5/8" x req'd. lg.
p		Connectors, as req'd.
u	1 1/2	Clamp, guy, 6" heavy duty
aa	6	Nut, eye, 5/8"
ap	3	Clamp, hot line, tap assembly
aq		Jumpers
bo	4	Shackle, anchor
ca	6	Deadend assembly, primary
cc	2	Deadend assembly, neutral

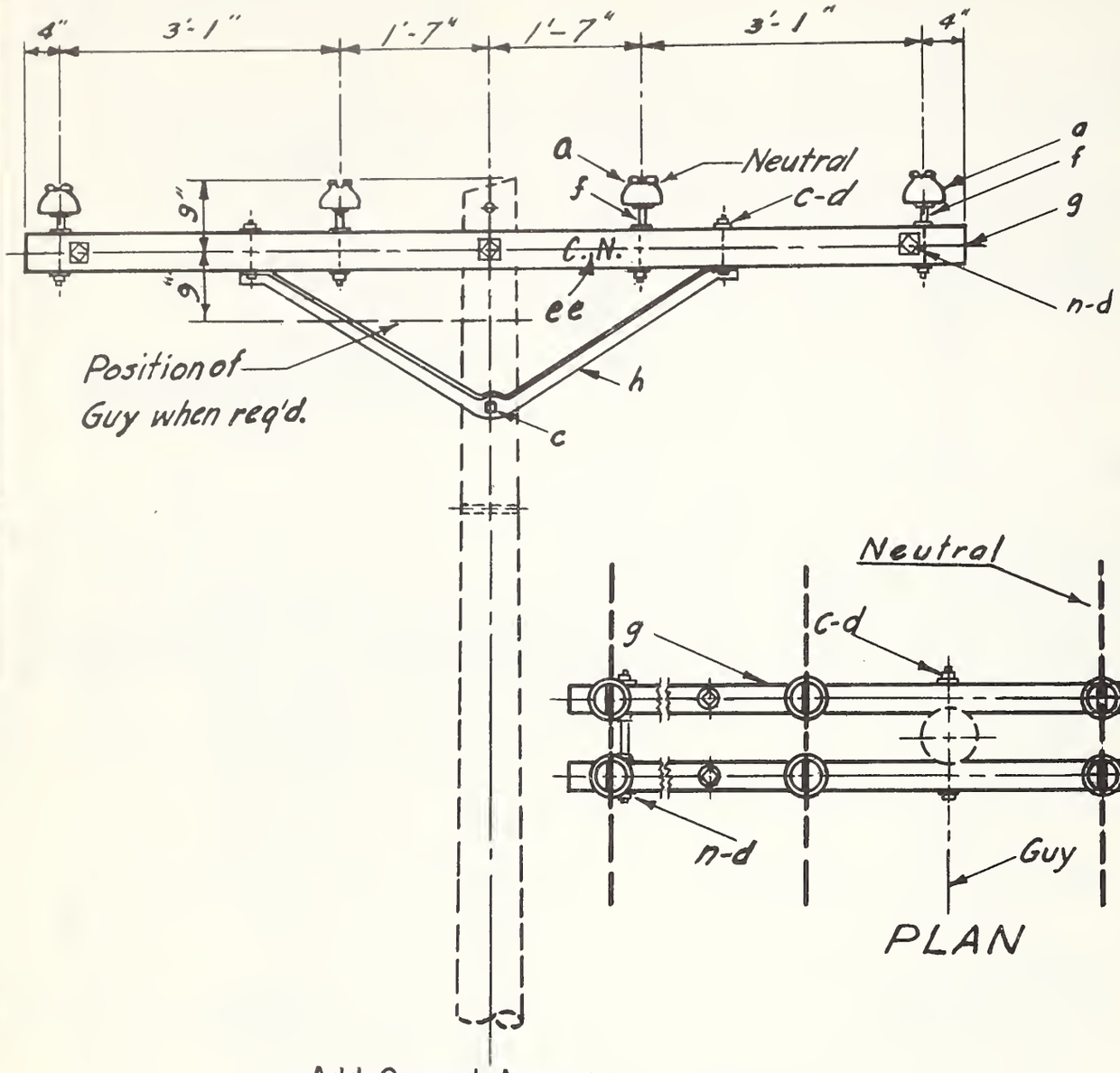
7.2/12.5 Kv. Primary, 3-Phase - 4 Wire Star Crossarm Construction, Deadend (Double) Large Conductors with Unbalanced Loads

Scale: 1/2"=1'-0"

Date: Nov. 25, 1947

C8-3

No.	REVISIONS	DATE
1	Reissued	8-56



Add Ground Assembly As Required

NOTE:
Wood crossarm braces of same span may be substituted.

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	8	Insulator, pin type		f	8	Pin, crossarm, steel, 5/8" x 10 3/4"	
c	2	Bolt, machine, 5/8" x req'd. length		g	2	Crossarm, 3 3/4" x 4 3/4" x 10'-0"	
c	4	Bolt, machine, 1/2" x req'd length		h	2	Brace, 1 1/2" x 1 1/2" x 3/16" Angle, 60" span	
d	10	Washer, 2 1/4" x 2 1/4" x 3/16", 1 1/16" hole		n	2	Bolt, double arming, 5/8" x req'd. length	
d	4	Washer, round, 1 3/8" dia. 9/16" hole		ee	2	Letters C.N., 2", with 1" nails	

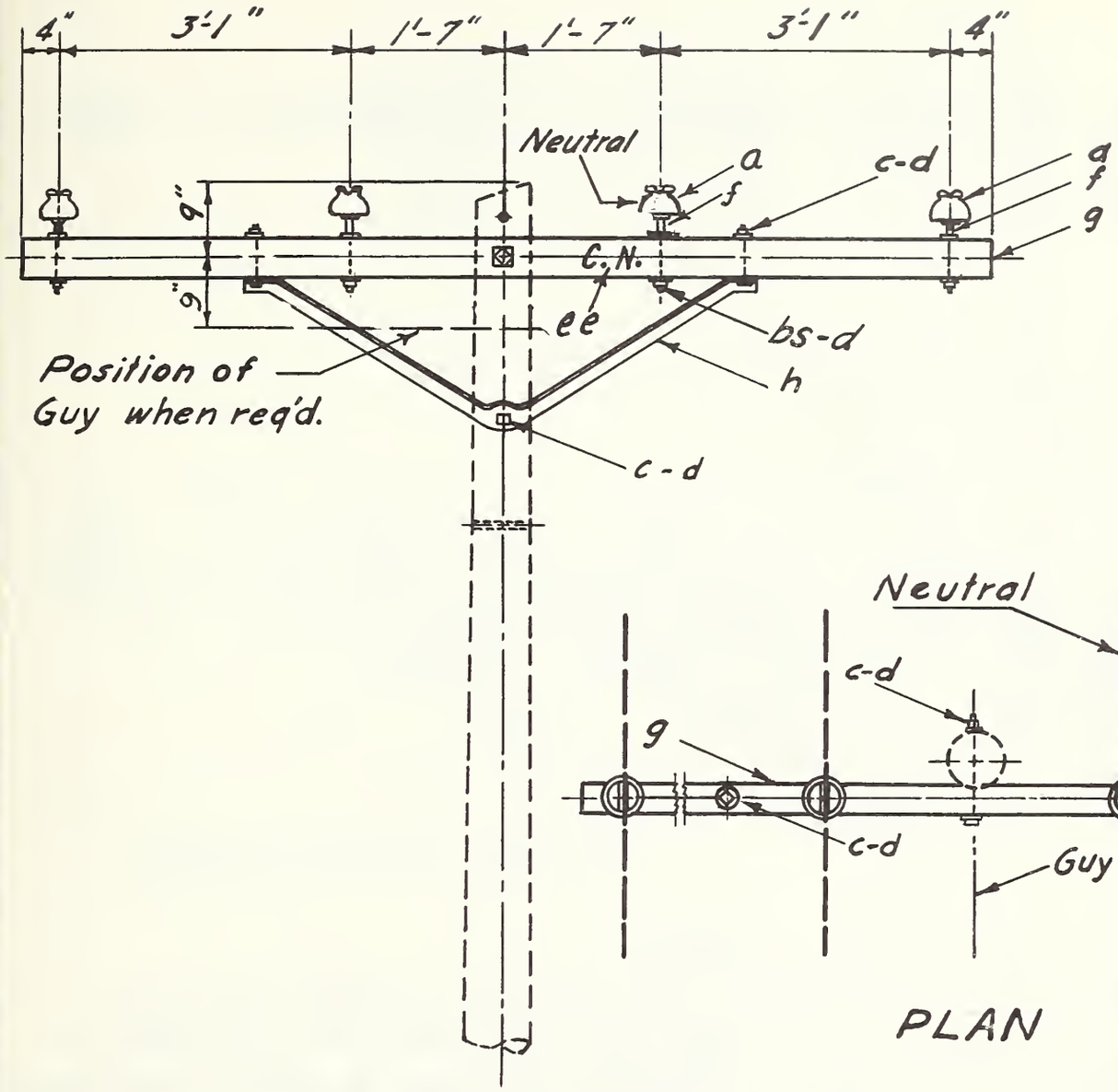
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION-DOUBLE LINE ARM

No.	REVISION	DATE
1	Reissued	8-56

Scale: 1/2" = 1'-0"

Date: July 9, 1943

C9



PLAN

NOTE:
Wood crossarm brace of same span may be substituted.

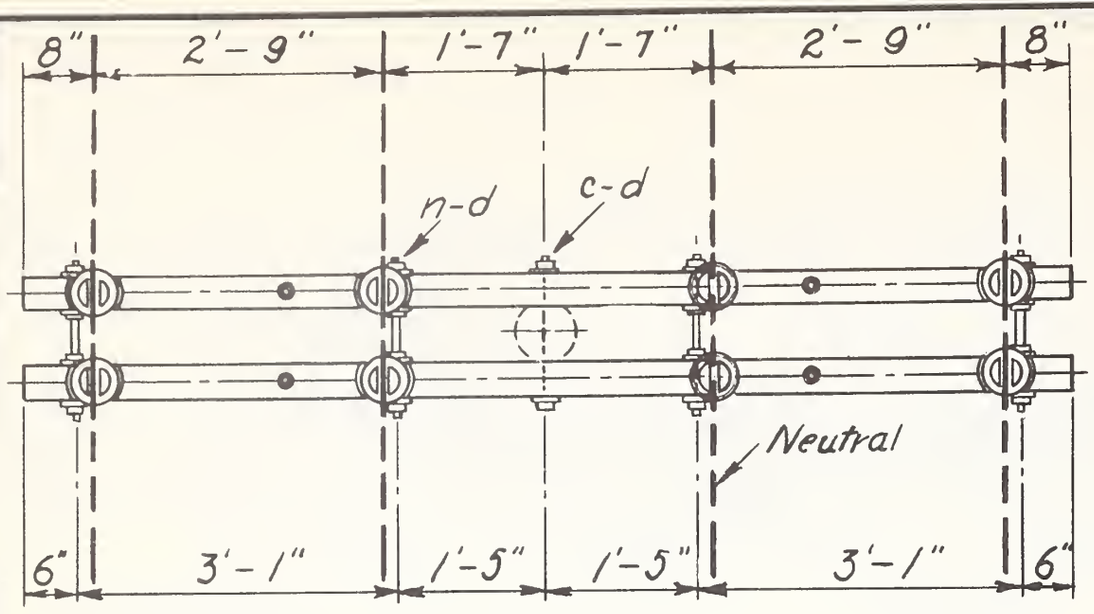
ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
a	4	Insulator, pin type		f	4	Pin, crossarm, steel, 5/8" x 10 3/4"	
c	2	Bolt, machine, 5/8" x req'd. length		g	1	Crossarm, 3 3/4" x 4 3/4" x 10'-0"	
c	2	Bolt, machine, 1/2" x req'd. length		h	1	Brace, 1 1/2" x 1 1/2" x 3/16" Angle, 60" span	
d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		ee	2	Letters "C.N.", 2", with 1" nails	
d	2	Washer, round, 1 3/8" dia., 9/16" hole					

7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION-SINGLE LINE ARM

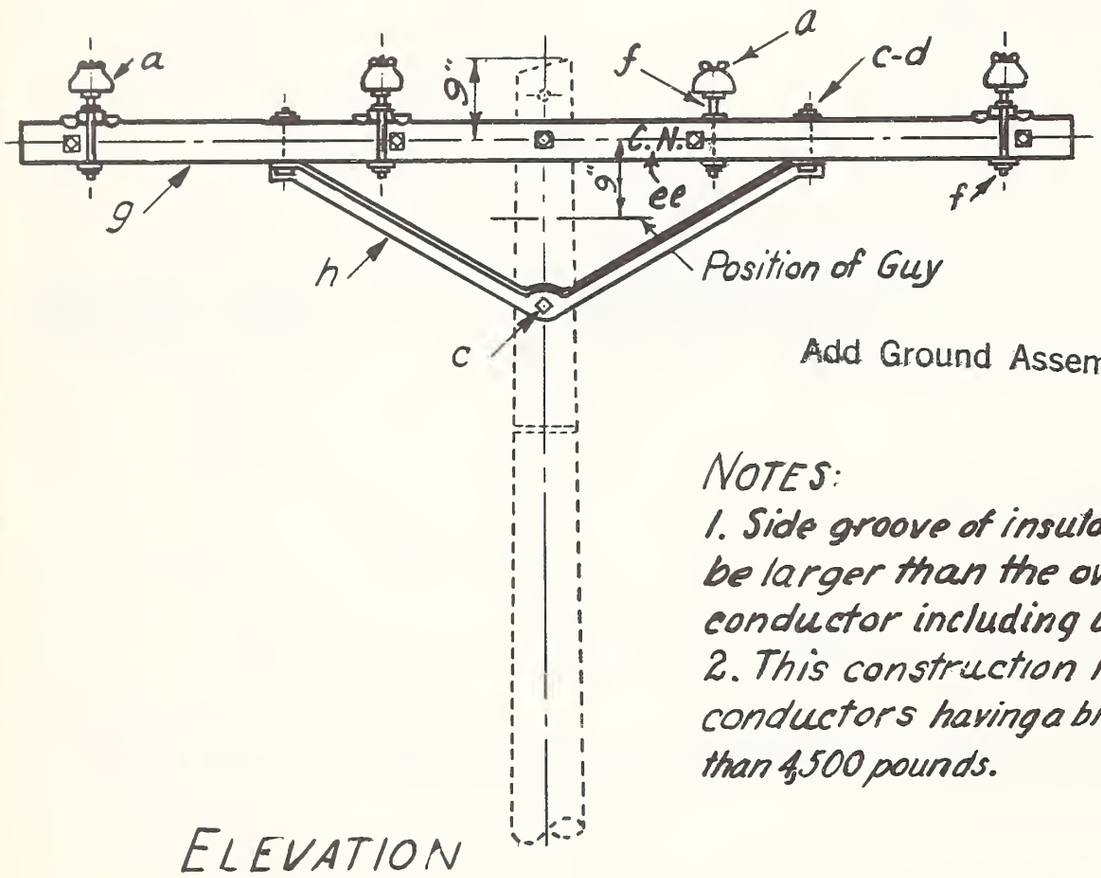
No.	REVISION	DATE
1	Reissued	8-56

Scale: 1/2" = 1'-0"

Date: C9-1[illegible]



PLAN



ELEVATION

Add Ground Assembly As Required

NOTES:

1. Side groove of insulator must always be larger than the overall diameter of conductor including armor rods when req'd.
2. This construction required for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	8	Insulator, pin type.		f	6	Pin, crossarm, steel, clamp type	
c	2	Bolt, machine, 5/8" x req'd. l'gth.		g	2	Crossarm, 3 3/4" x 4 3/4" x 10'-0"	
c	4	Bolt, machine, 1/2" x req'd. l'gth.		h	2	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60" span	
d	18	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		n	4	Bolt, double arming, 5/8" x req'd. l'g.	
d	4	Washer, rd. 1 3/8" diam. 9/16" hole		ee	2	Letters "C.N., 2", with 1" nails	
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"					

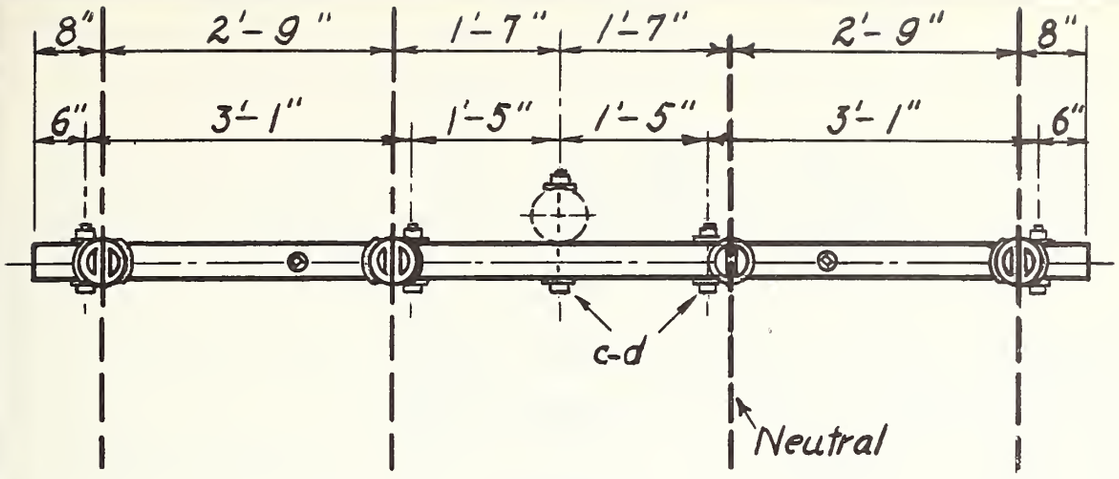
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION - DOUBLE LINE ARM (LARGE CONDUCTORS)

No.	REVISION	DATE
1	Reissued	8-56

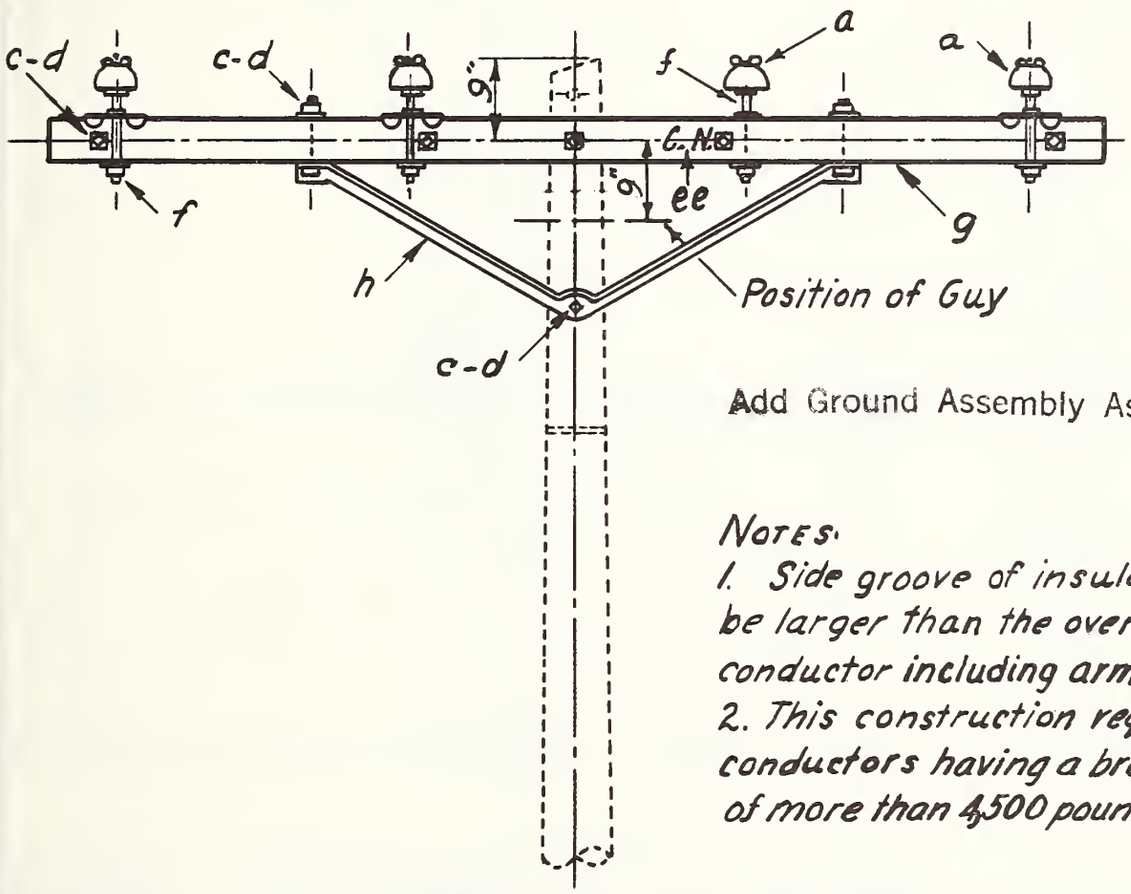
Scale: 1/2" = 1'-0"

Date: Dec. 2, 1947

C9-2



PLAN



Add Ground Assembly As Required

ELEVATION

NOTES:

1. Side groove of insulator must always be larger than the overall diameter of conductor including armor rods, if required.
2. This construction required for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	No. REQ'D	MATERIAL		ITEM	No REQ'D	MATERIAL	
a	4	Insulator, pin type		f	3	Pin, crossarm, steel, clamp type	
c	6	Bolt, machine, 5/8" x req'd. length		g	1	Crossarm, 3 3/4" x 4 3/4" x 10'-0"	
c	2	Bolt, machine, 1/2" x req'd. length		h	1	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60" span	
d	11	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		f	1	Pin, crossarm, steel, 5/8" x 10 3/4"	
d	2	Washer, rd., 1 3/8" diam., 9/16" hole		ee	2	Letters "C.N.", 2", with 1" nails	

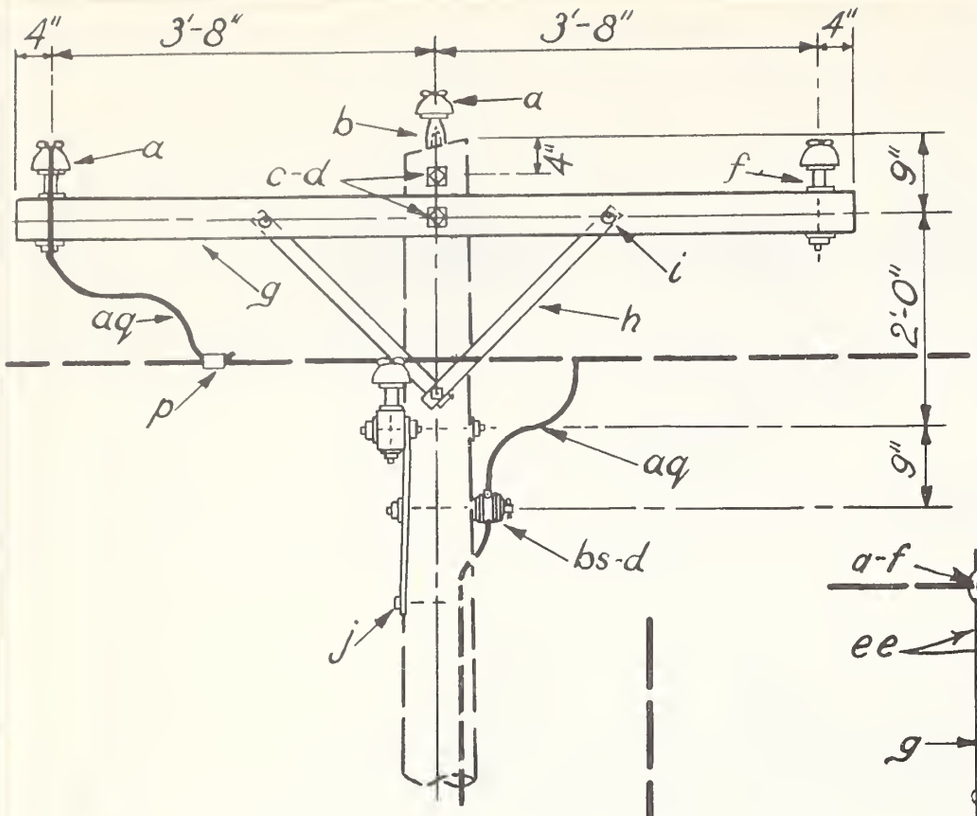
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION - SINGLE LINE ARM (LARGE CONDUCTORS)

No	REVISION	DATE
1	Reissued	8-56

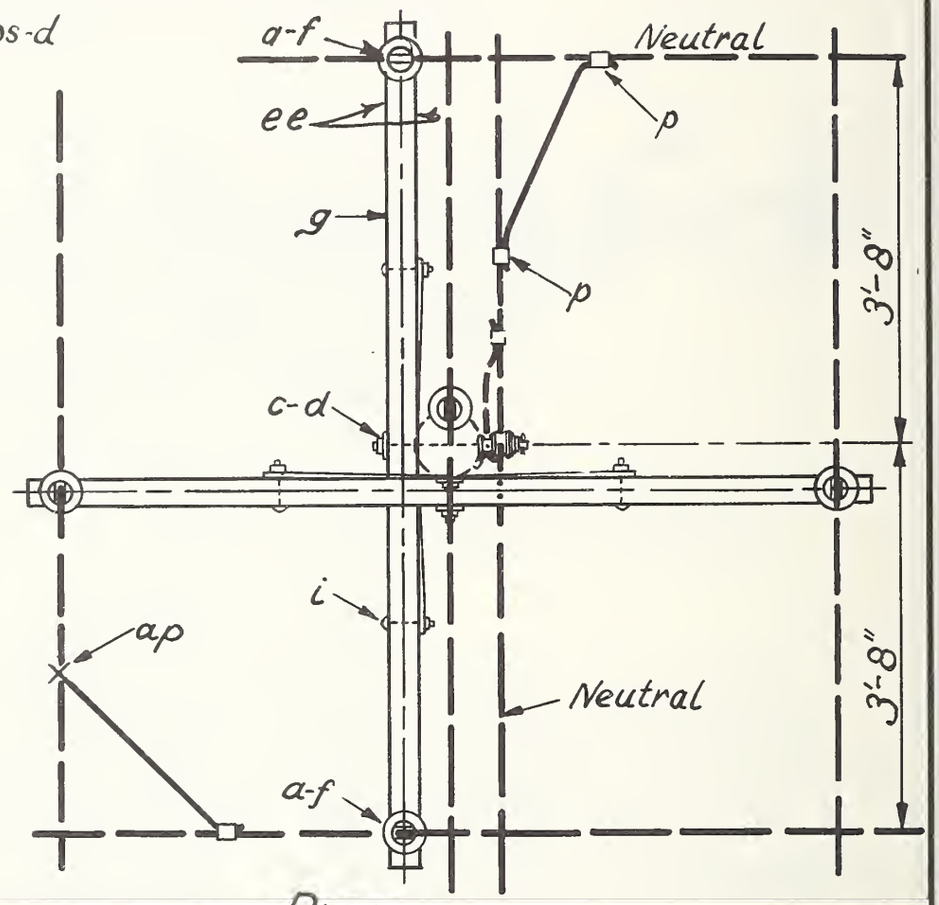
Scale: 1/2" = 1'-0"

Date: Dec. 2, 1947

C 9-3



Add Ground Assembly As Required



PLAN

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	5	Insulator pin type		j	2	Screw, lag, ½"x4"	
b	1	Pin, pole top, 15"		p		Connectors, as req'd.	
c	3	Bolt, machine, ⅝"x req'd. length					
d	5	Washer, 2¼"x2¼"x 3/16", 13/16" hole		ap	1	Clamp, hot line, tap assembly	
f	4	Pin, crossarm, steel, ⅝"x10¼"		aq		Jumpers and leads as req'd.	
g	2	Crossarm, 3½"x4½"x 8'-0"		bs	1	Bolt, single upset, insulated	
h	4	Brace, 1¼"x1¼"x 28"		ee	2	Letters "C.N.", 2", with 1" nails	
i	4	Bolt, carriage, ⅜"x4½"					

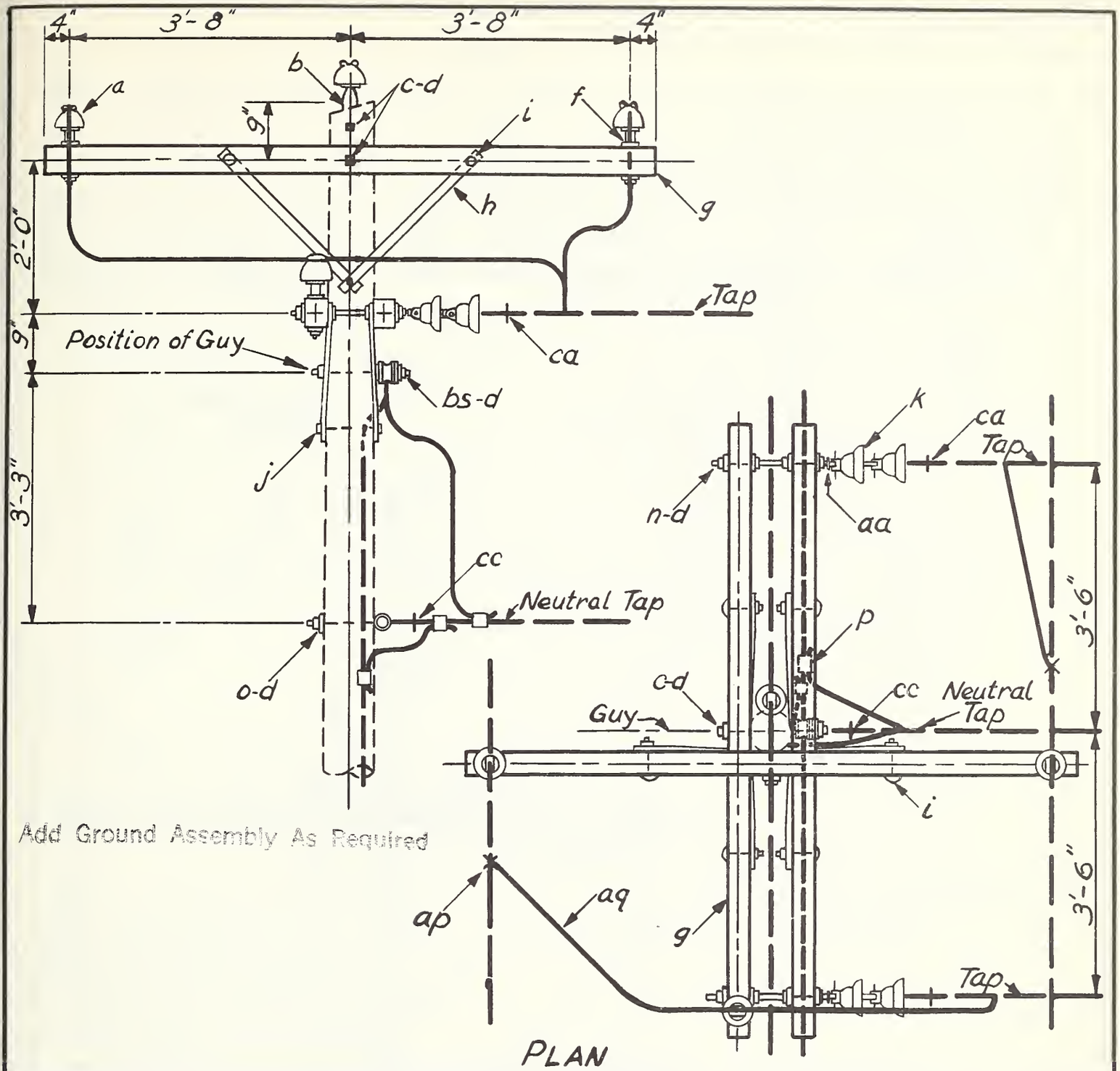
7.2/12.5 KV. PRIMARY, 3-PHASE, 4-WIRE STAR
CROSSARM CONSTR.-SINGLE-PHASE JUNCTION AT 0° TO 5° ANGLE

Scale: ½"=1'-0"

Date: Apr. 12, 1949

C-22

No.	REVISION	DATE
1	Reissued	8-56



PLAN

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
a	4	Insulator, pin type		n	2	Bolt, dble. arming, 5/8" x req'd lgth.	
b	1	Pin, pole top, 15"		o	1	Bolt, eye, 5/8" x req'd. length	
c	3	Bolt, machine, 5/8" x req'd length		p		Connectors, as required	
d	14	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		aa	2	Nut, eye, 5/8"	
f	3	Pin, crossarm, steel, 5/8" x 10¾"		ap	2	Clamp, hot line, tap assembly	
g	3	Crossarm, 3½" x 4½" x 8'-0"		aq		Jumpers	
h	6	Brace, 1¼" x ¼" x 28"		ca	2	Deadend assembly primary	
i	6	Bolt, carriage, 3/8" x 4½"		cc	1	Deadend assembly neutral	
j	3	Screw. lag, ½" x 4"		bs	1	Bolt, single upset, insulated	
k	4	Insulator, Suspension					

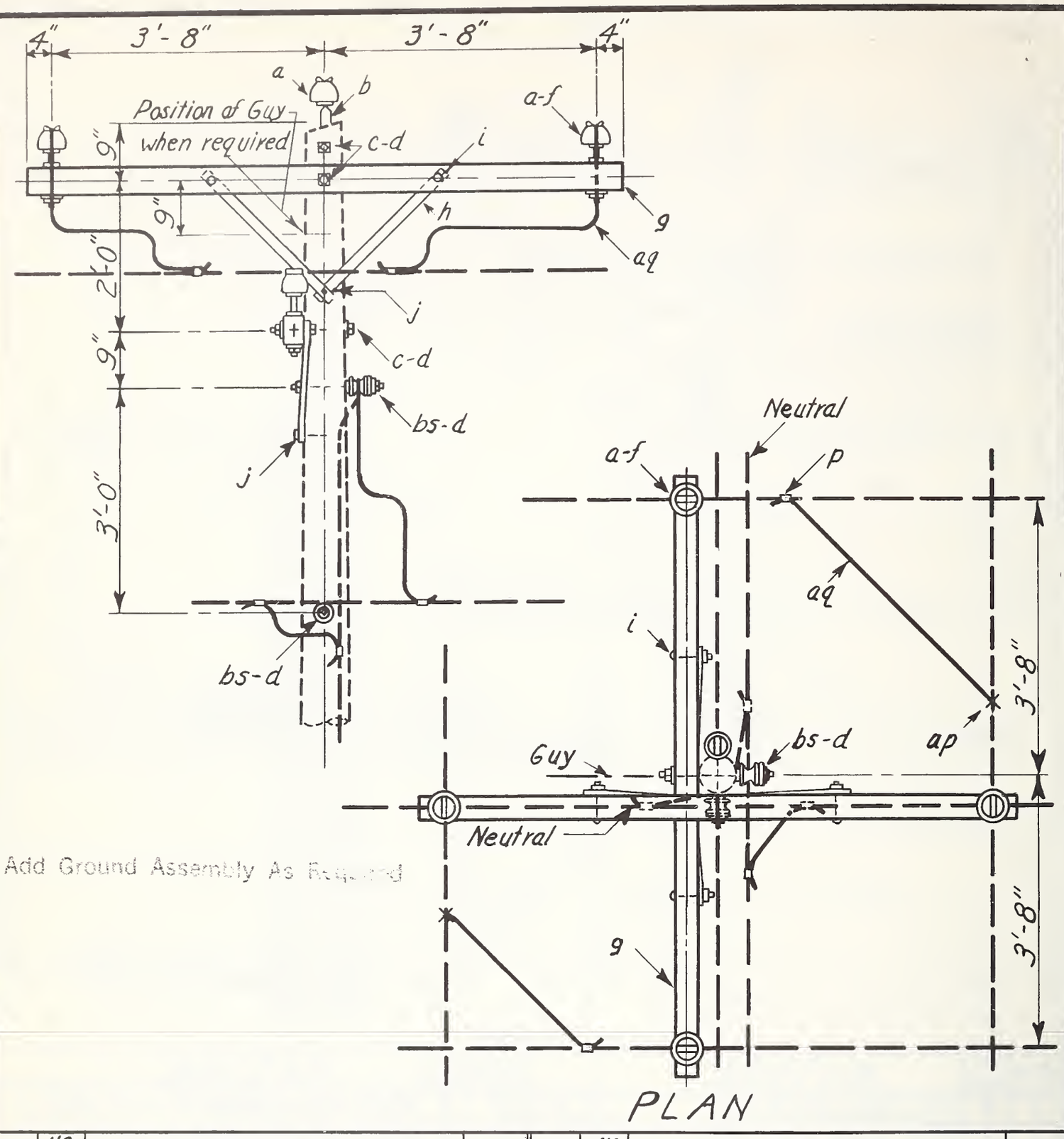
7.2/12.5 KV. PRIMARY, 3-PHASE 4 WIRE STAR CROSSARM CONSTR.- 2-PHASE TAP AT 0° TO 5° ANGLE

NO.	REVISION	DATE
1	Reissued	8-56

Scale: ½" = 1'-0"

Date: Mar. 29, 1949

C 23



ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
a	5	Insulator, pin type		i	4	Bolt, carriage, 3/8" x 4 1/2"	
b	1	Pin, pole top, 15"		j	2	Screw, lag, 1/2" x 4"	
c	3	Bolt, machine, 5/8" x req'd. length		p		Connectors, as required	
d	6	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		ap	2	Clamp, hot line, tap assembly	
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"		aq		Jumpers	
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"		bs	2	Bolt, single upset, insulated	
h	4	Brace, 1 1/4" x 1/4" x 28"					

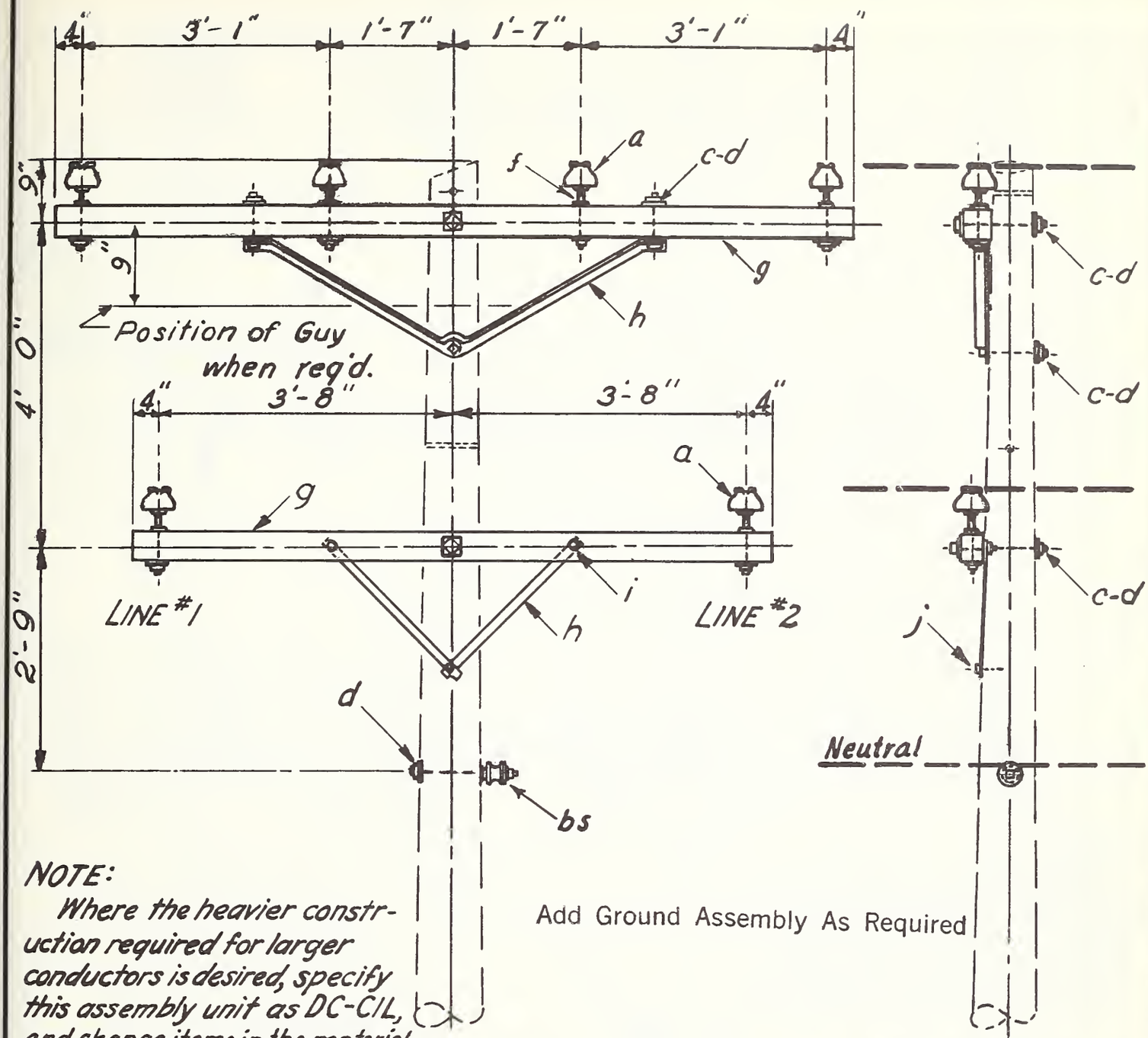
7.2/12.5 KV. PRIMARY 3-PHASE 4-WIRE STAR CROSSARM CONSTR. - TWO-PHASE JUNCTION AT 0° TO 5° ANGLE

Scale: 1/2" = 1'-0"

Date: Mar. 29, 1949

C 24

No.	REVISION	DATE
1	Reissued	8-56



Add Ground Assembly As Required

NOTE:

Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C1L, and change items in the material list as required.

ELEVATION

SIDE ELEVATION

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	6	Insulator, pin type		g	1	Crossarm, 3½" x 4½" x 8'-0"	
c	3	Bolt, machine, 5/8" x req'd. lg'h.		h	1	Brace, angle, 1½" x 1½" x 3/16", 60° span	
c	2	Bolt, machine, ½ x req'd. lg'h.		h	2	Brace, 1¼" x ¼" x 28" long	
d	6	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		i	2	Bolt, carriage, 3/8" x 4½"	
d	2	Washer, 1 3/8" diam., 9/16" hole		j	1	Screw, lag ½" x 4"	
f	6	Pin, crossarm, steel, 5/8" x 10¾"		bs	1	Bolt, single upset, insulated	
g	1	Crossarm, 3¾" x 4¾" x 10'-0"					

7.2/12.5 K.V. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION - DOUBLE CIRCUIT. SINGLE PRIMARY SUPPORT AT 0° TO 5° ANGLE.

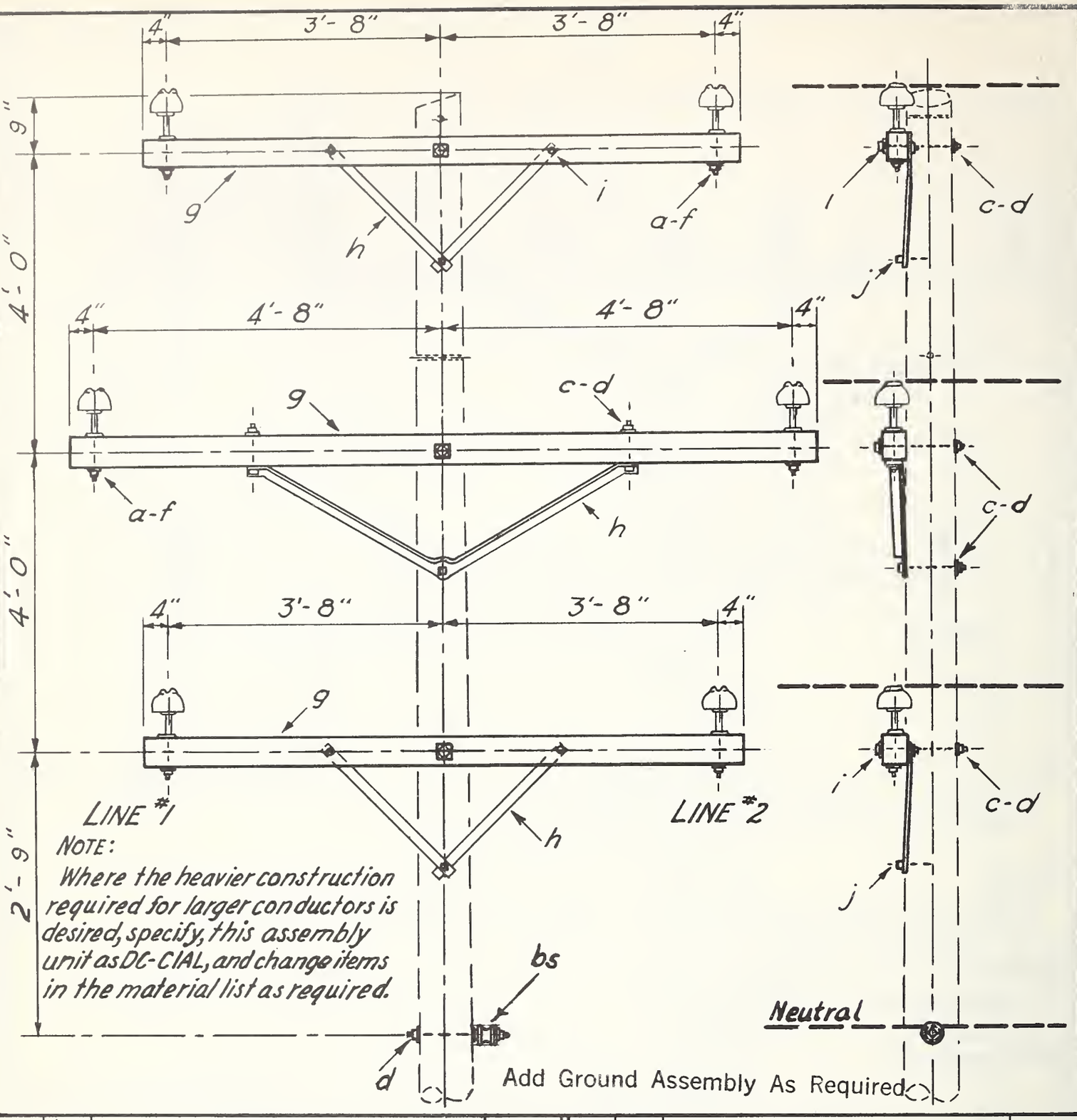
No.	REVISION	DATE
1	Revised	9-55

Scale ½"=1'-0"

2 X-ARM TYPE

Date: Apr. 6, 1948

DC-C1



NOTE:
Where the heavier construction required for larger conductors is desired, specify, this assembly unit as DC-C1AL, and change items in the material list as required.

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	6	Insulator, pin type		g	2	Crossarm, 3½"x4½"x8'-0" long	
c	4	Bolt, machine, 5/8" x req'd. length		h	1	Brace, angle, 1½"x1½"x3/16", 60" sp.	
c	2	Bolt, machine, ½" x req'd. length		h	4	Brace, flat, ¼"x1¼"x28" long	
d	8	Washer, 2¼"x2¼"x3/16", 13/16" hole		i	4	Bolt, carriage, 3/8"x4½"	
d	2	Washer, round, 1⅜" diam, 9/16" hole		j	2	Screw, lag, ½"x4"	
f	6	Pin, crossarm, steel, 5/8"x10¾"		bs	1	Bolt, single upset, insulated	
g	1	Crossarm, 3¾"x4¾"x10'-0" long					

7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION-DOUBLE CIRCUIT SINGLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

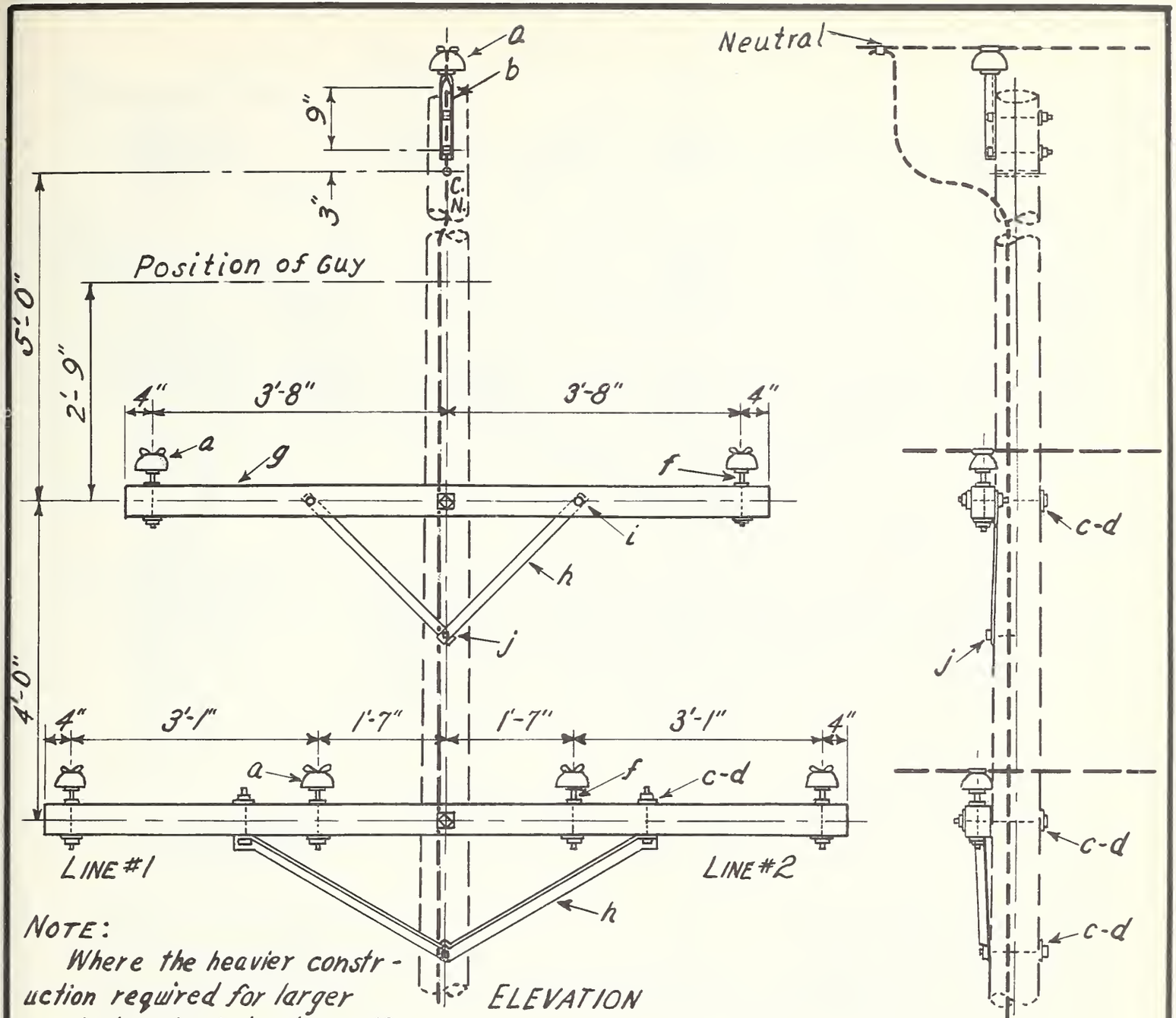
No.	REVISION	DATE
1	Revised	9-55

Scale: ½"=1'-0"

3 X-ARM TYPE

Date: Apr. 6, 1948

DC-C1A



NOTE:

Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C1BL, and change items in the material list as required.

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
a	7	Insulator, pin type		h	1	Brace, angle, 1½" x 1½" x 3/16", 60" span	
c	5	Bolt, machine, 5/8" x req'd. length		h	2	Brace, flat, 1¼" x ¼" x 28"	
c	2	Bolt, machine, ½" x req'd. length		i	2	Bolt, carriage, 3/8" x 4½"	
d	7	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		j	1	Screw, lag, ½" x 4"	
d	2	Washer, 1⅜" dia., 9/16" hole		b	1	Pin, pole top 15"	
f	6	Pin, crossarm, steel, 5/8" x 10¾"		ee	2	Letters "C.N., 2" with 1" nails	
g	1	Crossarm, 3¼" x 4¾" x 10'-0"					
g	1	Crossarm, 3½" x 4½" x 8'-0"					

7.2/12.5 K.V. PRIMARY, 3-PHASE, 4-WIRE STAR
CROSSARM CONSTRUCTION - DOUBLE CIRCUIT
SINGLE PRIMARY SUPPORT WITH OVERHEAD NEUTRAL AT 0° TO 5°

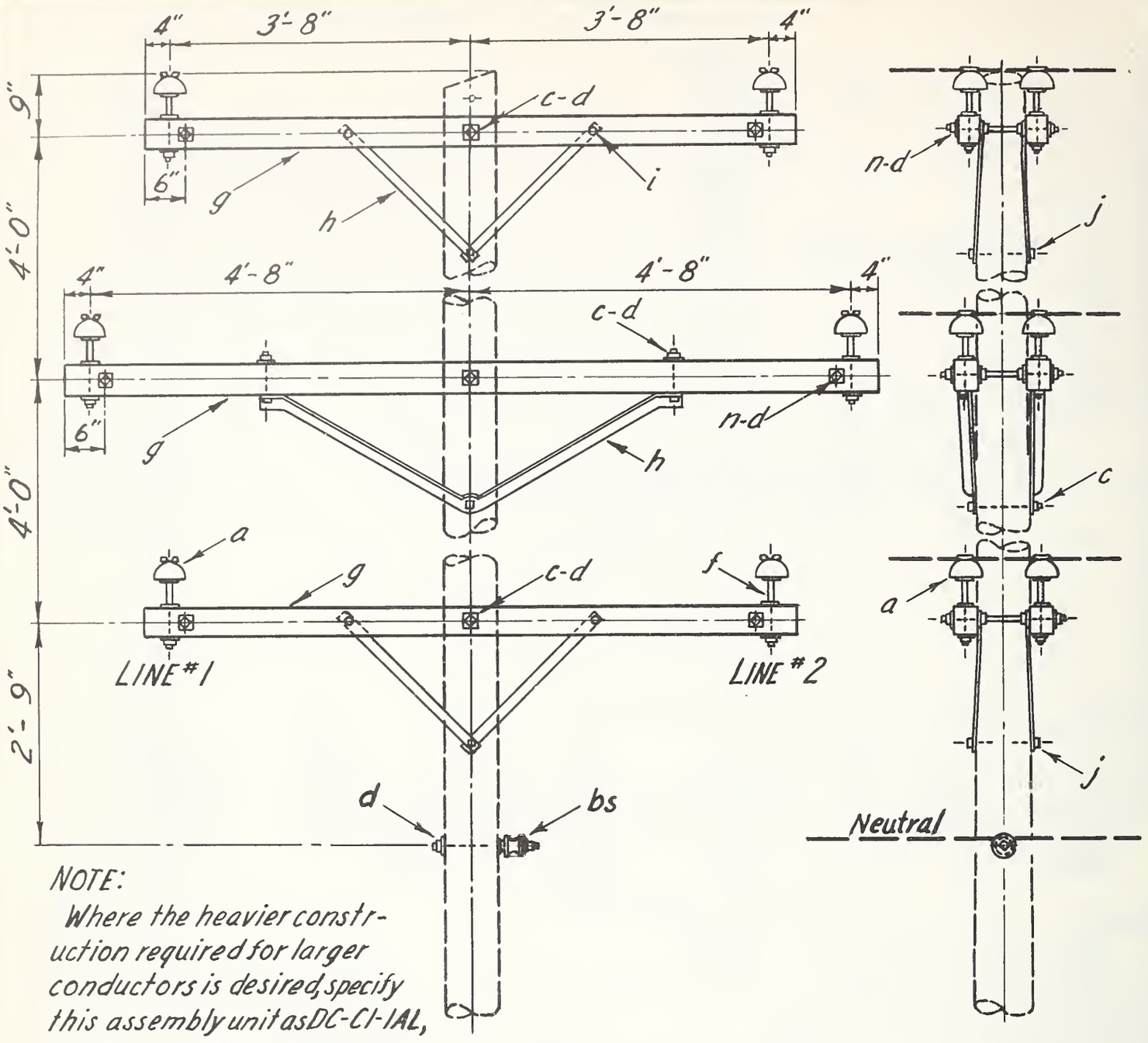
No.	REVISION	DATE
1	Reissued	8-56

Scale: ½" = 1'-0"

2X-ARM TYPE

Date: Apr. 19, 1949

DC-C1B



NOTE:
Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-CI-IAL, and change items in the material list as required.

Add Ground Assembly As Required

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
a	12	Insulator, pin type		g	4	Crossarm, 3½"x4½"x8'-0" long	
c	4	Bolt, machine, 5/8"x req'd. length		h	2	Brace, angle, 1½"x1½"x3/16", 60° span	
c	4	Bolt, machine, ½"x req'd. length		h	8	Brace, flat, ¼"x1¼"x28" long	
d	31	Washer, 2¼"x2¼"x3/16", 13/16" hole		i	8	Bolt carriage, 3/8"x4½"	
d	4	Washer, round, 1⅜" diam., 9/16" hole		j	4	Screw, lag, ½"x4"	
f	12	Pin, crossarm, steel, 5/8"x10¾"		n	6	Bolt, double arming, 5/8"x req'd. lgth.	
g	2	Crossarm, 3¾"x4¾"x10'-0" long		bs	1	Bolt, single upset, insulated	

7.2/12.5 KV. PRIMARY, 3-PHASE, 4-WIRE STAR CROSSARM CONSTRUCTION - DOUBLE CIRCUIT DOUBLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

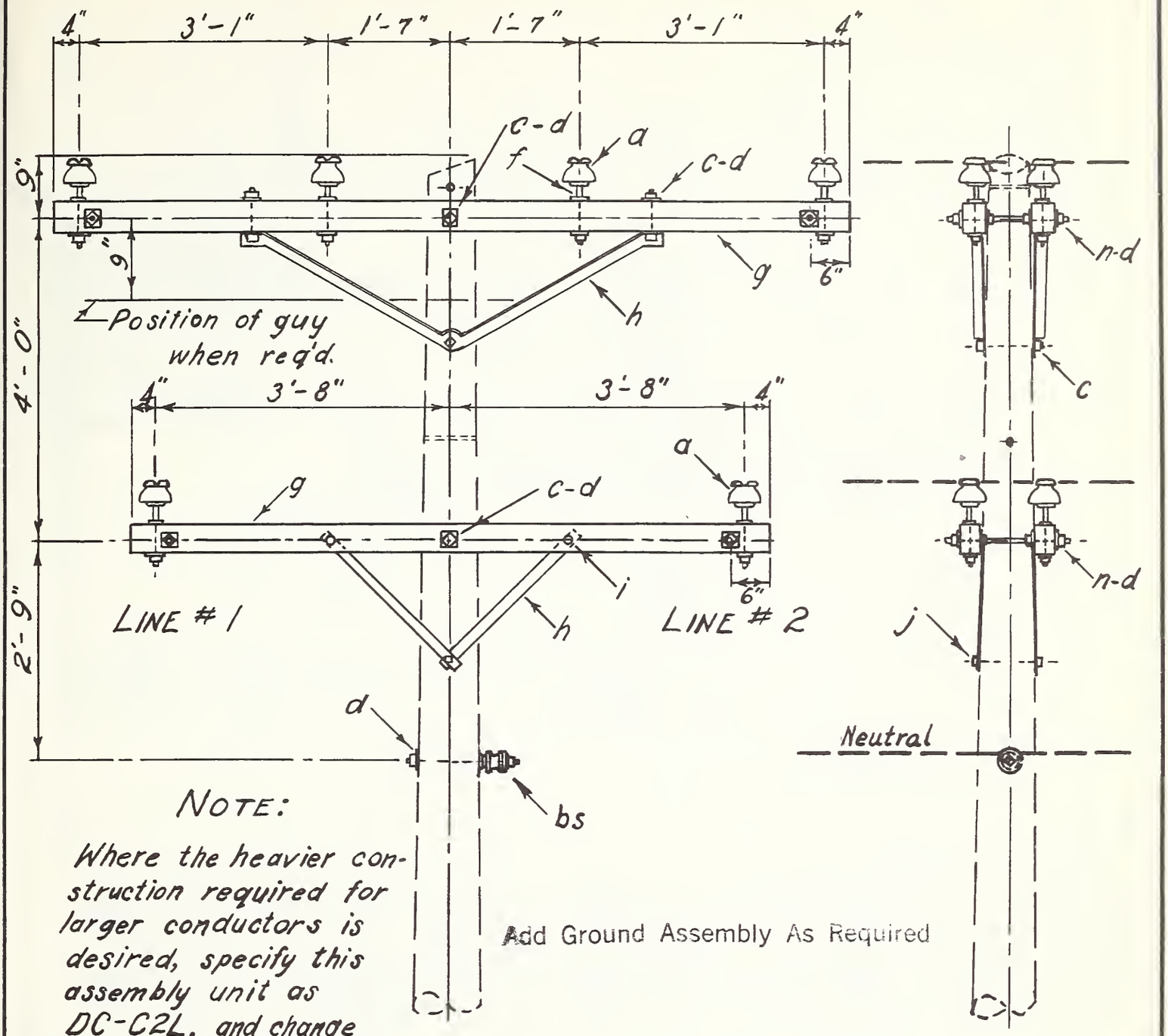
NO.	REVISION	DATE:
1	Revised	9-55

Scale: ½"=1'-0"

3X-ARM TYPE

Date: Jan. 18, 1949

DC-CI-1A



NOTE:

Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C2L, and change items in the material list as required.

Add Ground Assembly As Required

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	12	Insulator, pin type		g	2	Crossarm, 3½"x4½"x8'-0" long	
c	3	Bolt, machine, ⅝"x req'd length		h	2	Brace, angle, 1½"x1½"x⅜", 60" span	
c	4	Bolt, machine, ½"x req'd length		h	4	Brace, ¼"x¼"x28" long	
d	21	Washer, 2¼"x2¼"x⅜", ⅞" hole		i	4	Bolt, carriage, ⅜"x4½"	
d	4	Washer, 1⅜" diam., ⅜" hole		j	2	Screw, lag, ½"x4"	
f	12	Pin, crossarm, steel, ⅝"x10¾"		n	4	Bolt, double arming, ⅝"x req'd length	
g	2	Crossarm, 3¾"x4¾"x10'-0" long		bs	1	Bolt, single upset, insulated	

7.2/12.5 Kv. Primary, 3-Phase, 4-Wire Star Crossarm Construction - Double Circuit Double Primary Support at 0° to 5° Angle

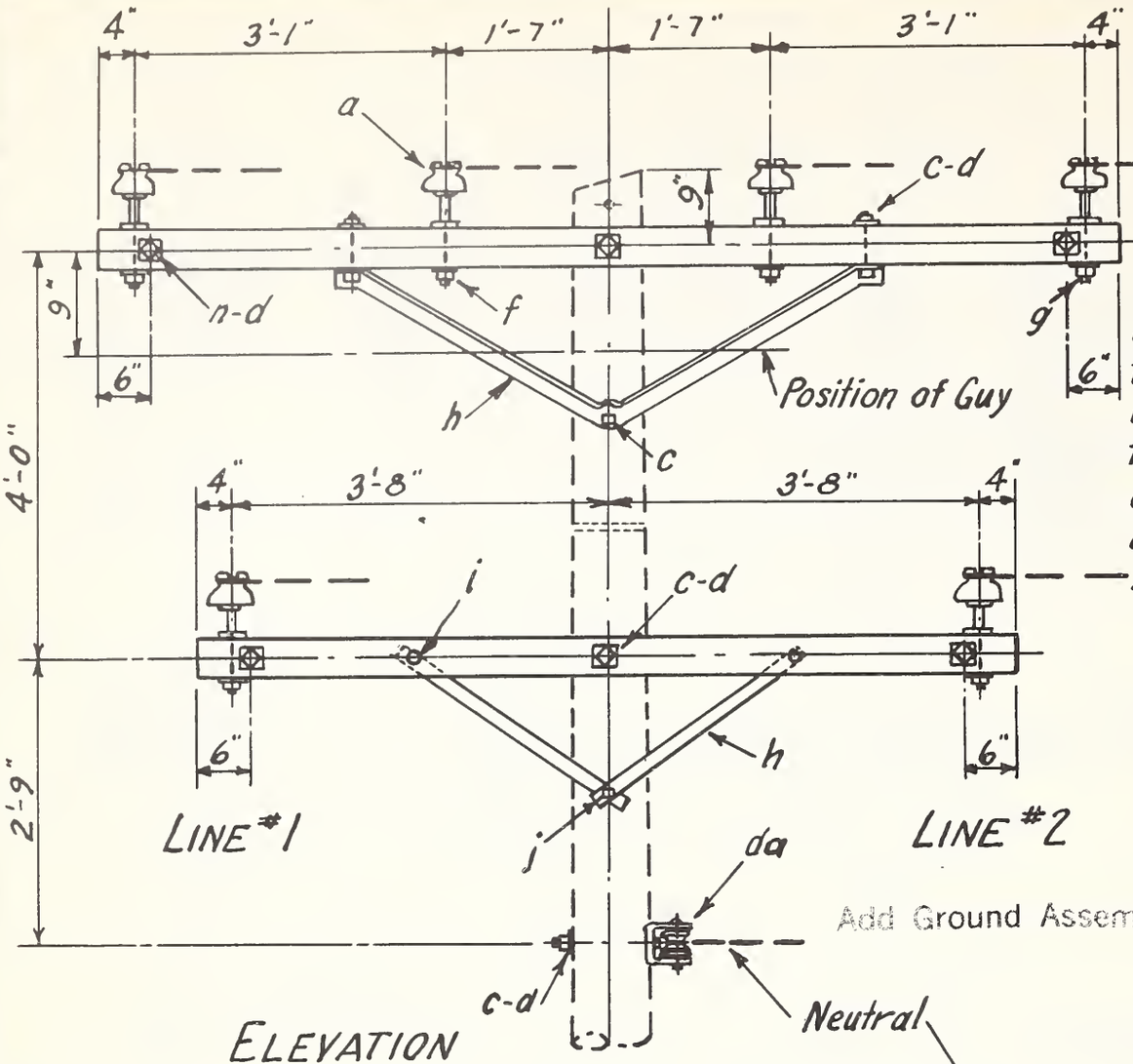
Nº	REVISION	DATE
1	Revised	9-55

Scale: ½"=1'-0"

2 X-ARM TYPE

Date: Jan. 4, 1949

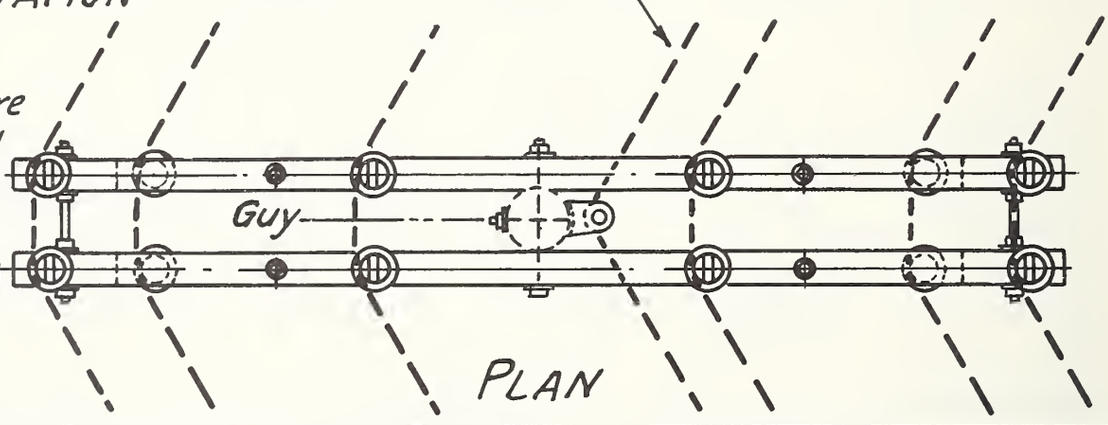
DC-C2



ELEVATION

NOTE: Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C2-1L, and change items in the material list as req'd.

NOTE: For angles of more than 30° use vertical construction on two poles or assemblies similar to Dwg. DC-4CA



PLAN

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	12	Insulator, pin type		h	2	Brace, angle, 1½"x1½"x3/16", 60" span	
c	4	Bolt, machine, 5/8" x req'd. length		h	4	Brace, flat, 1¼"x¼"x28"	
c	4	Bolt, machine, ½" x req'd. length		i	4	Bolt, carriage, 3/8"x4½"	
d	21	Washer, 2¼"x2¼"x3/16", 13/16" hole		j	2	Screw, lag, ½"x4"	
d	4	Washer, round, 1⅜" dia, 9/16" hole		n	4	Bolt, double arming, 5/8" x req'd. length	
f	12	Pin, crossarm, steel, 5/8"x10¾"		da	1	Bracket, insulated	
g	2	Crossarm, 3¾"x4¾"x10'-0"					
g	2	Crossarm, 3½"x4½"x8'-0"					

7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR DOUBLE CIRCUIT CROSSARM CONSTRUCTION - 5° TO 30° ANGLE

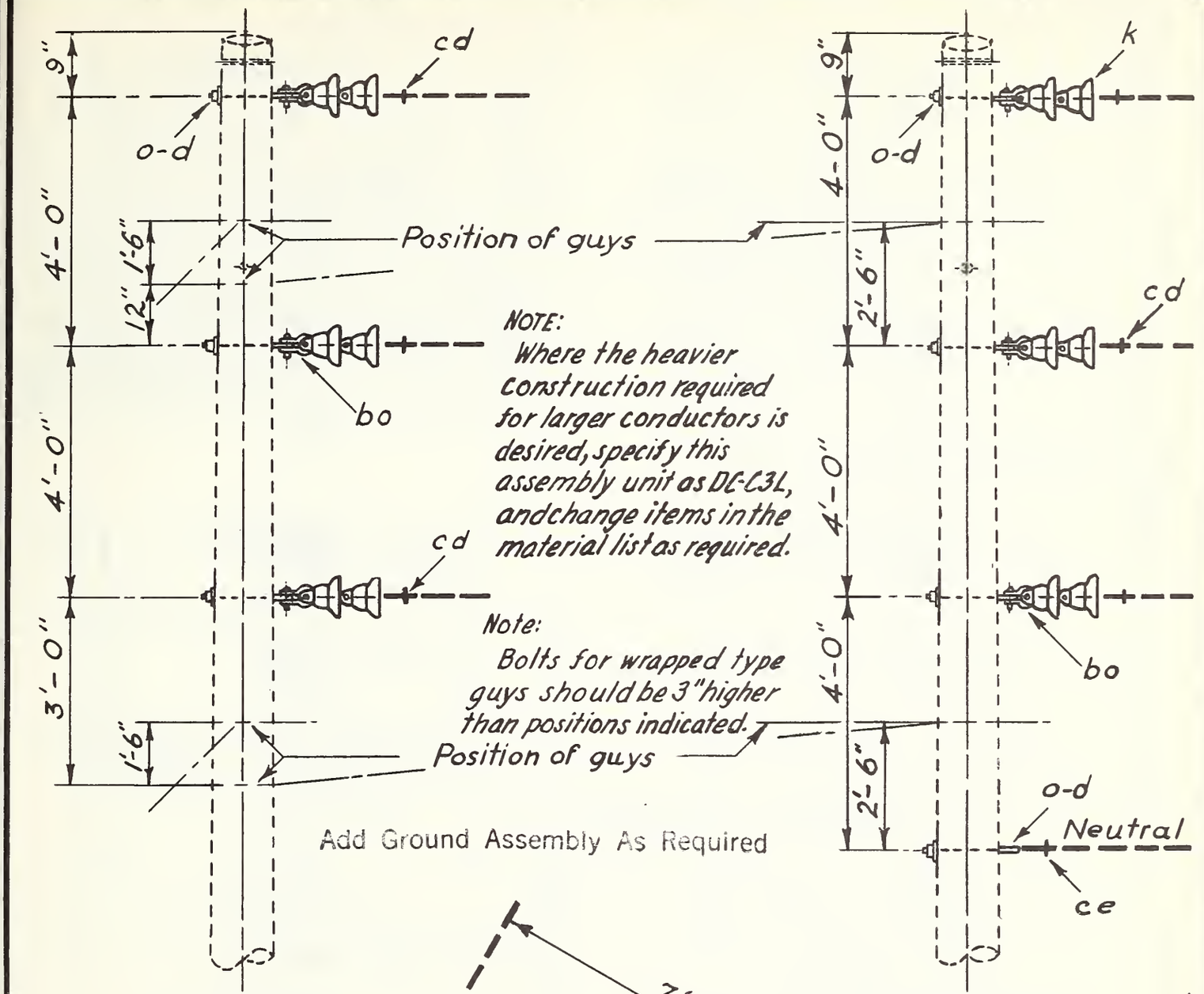
Scale: ½"=1'-0"

2 X-ARM TYPE

Date: Apr. 23, 1948

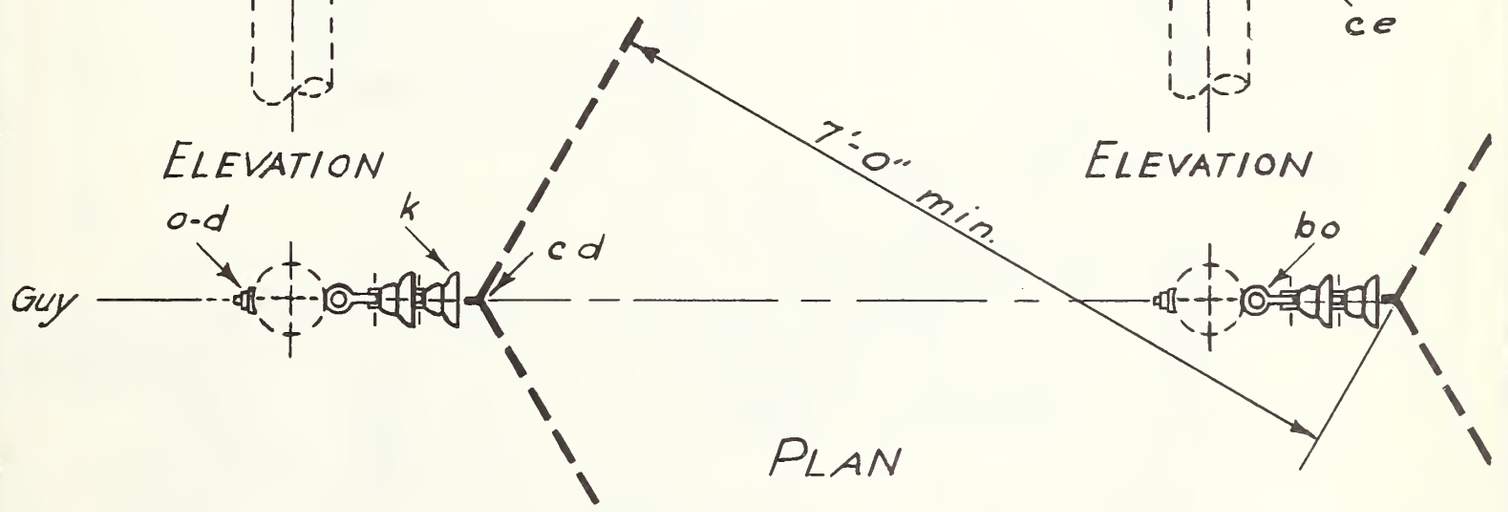
DC-C2-1

No.	REVISION	DATE
1	Reissued	8-56



NOTE:
Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C3L, and change items in the material list as required.

Note:
Bolts for wrapped type guys should be 3" higher than positions indicated.



PLAN

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
d	7	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		cd	6	Angle assembly, primary	
k	12	Insulator, suspension		ce	1	Angle assembly, neutral	
o	7	Bolt, eye, 5/8" x req'd length					
bo	6	Shackle, anchor					

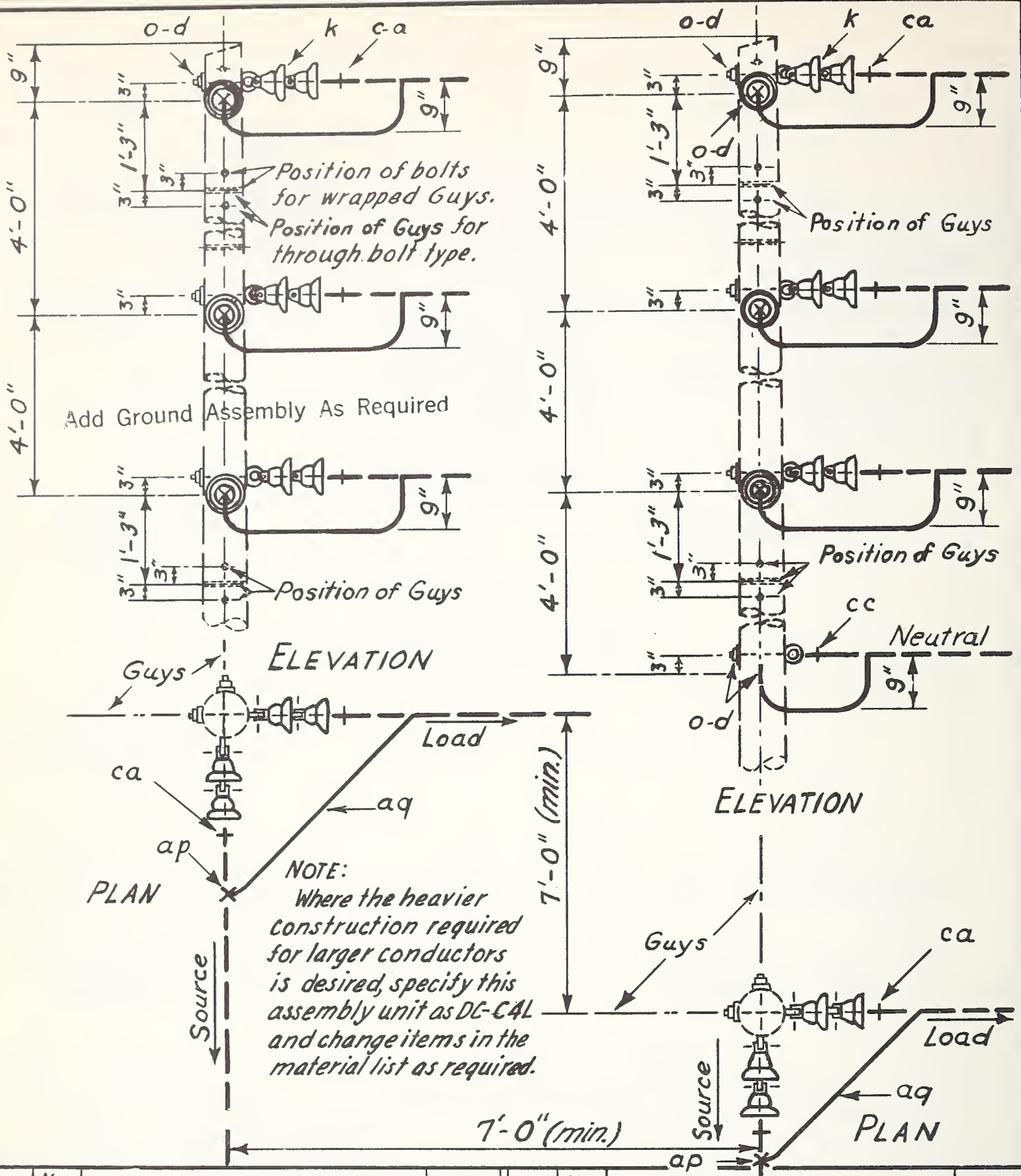
7.2/12.5 Kv. PRIMARY, 3-PHASE 4-WIRE STAR DOUBLE CIRCUIT VERTICAL CONSTRUCTION - 30° TO 60° ANGLE

No.	REVISION	DATE
1	Reissued	8-56

Scale: N.T.S.

Date: Jan. 15, 1948

DC-C3



ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
aq		Jumpers		d	14	Washers, 2¼"x2¼"x 3/16", 13/16" hole	
ap	6	Clamp, hot line, tap assembly		k	24	Insulator, suspension	
ca	12	Deadend, Assembly, Primary		o	14	Bolt, eye, 5/8" x req'd length	
cc	2	Deadend, Assembly, Neutral		p		Connectors, as req'd.	

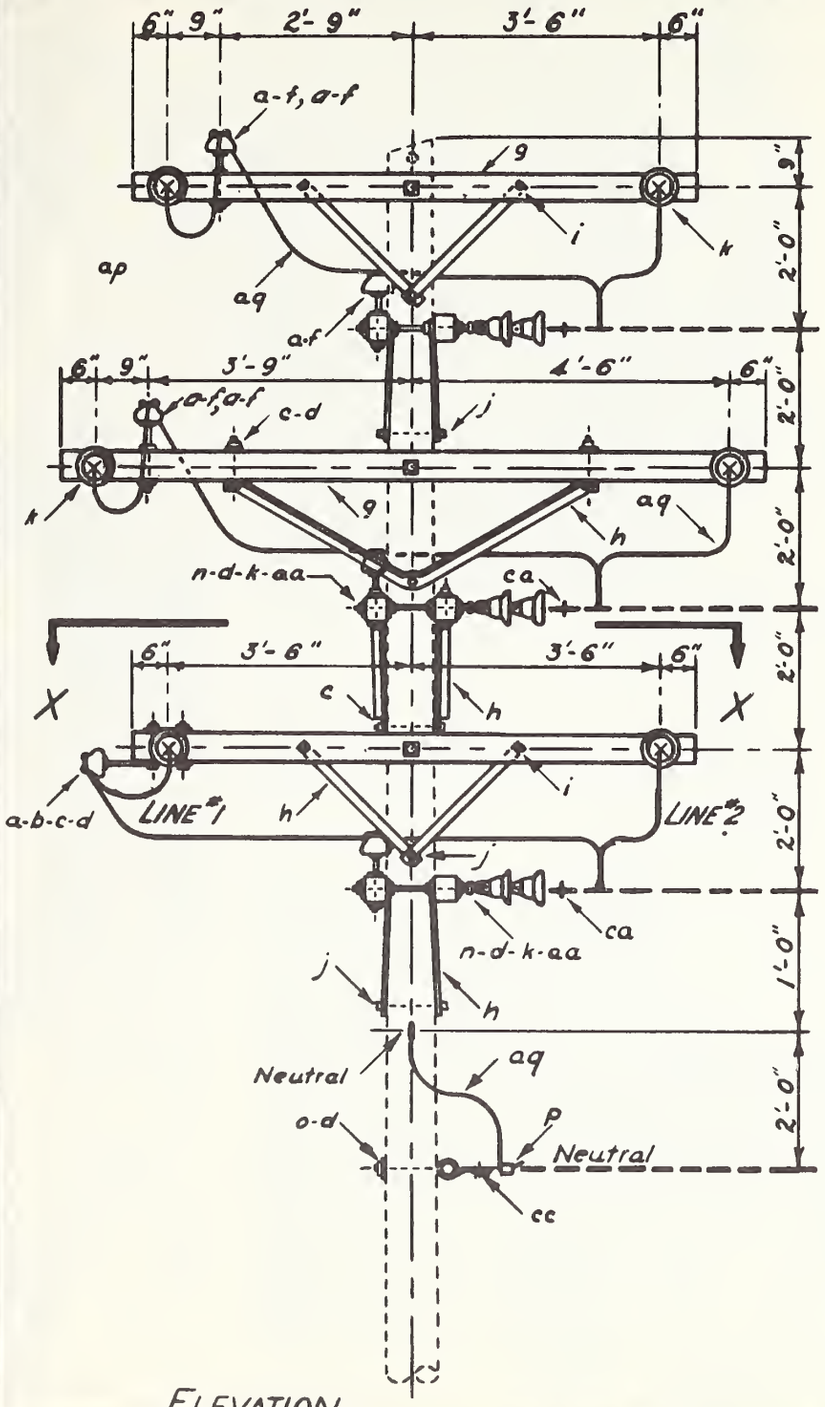
№	REVISION	DATE
1	Reissued	8-56

7.2/12.5 K V. PRIMARY, 3-PHASE, 4-WIRE STAR DOUBLE CIRCUIT VERTICAL CONSTR. 60° TO 90° ANGLE

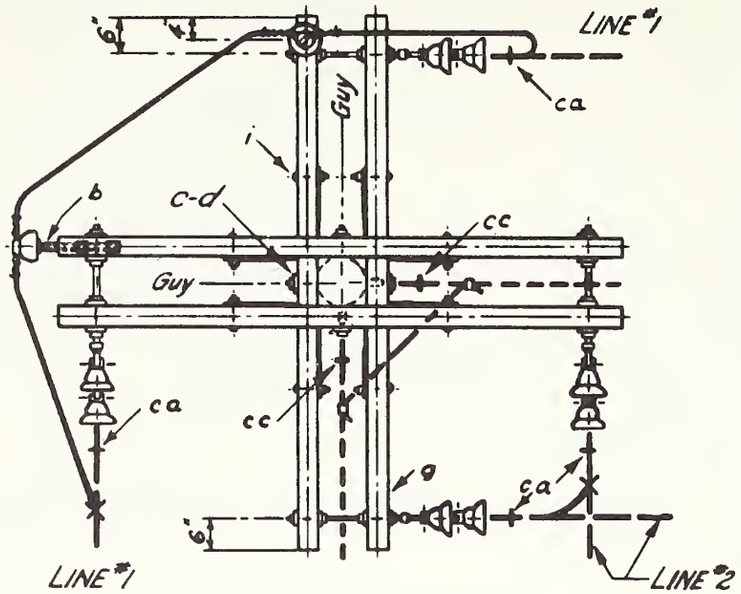
Scale: ½"-1'-0"

Date: Jan. 15, 1948

DC-C4



ELEVATION



SECTION X-X

Add Ground Assembly As Required

Item	No. Req'd	Material
a	8	Insulator, pin, type
b	1	Pin, poletop, 15"
c	10	Bolt, machine, 5/8" x req'd. length
c	8	Bolt, machine, 1/2" x req'd. length
d	64	Washer, 2¼" x 2¼" x 3/16", 13/16" hole
d	8	Washer, Rd., 1 5/16" Dia. 9/16" hole
f	7	Pin, steel, crossarm, 5/8" x 10¾"
g	4	Crossarm, 3¾" x 4¾" x 10'-0"
g	8	Crossarm, 3½" x 4½" x 8'-0"
h	4	Brace, angle, 1½" x 1½" x 3/16", 60° SA
h	16	Brace, flat, 1¼" x ¼" x 28"
i	16	Bolt, corriage, 3/8" x 4½"
j	8	Screw, lag, ½" x 4"
k	24	Insulator, suspension
n	12	Bolt, double arming, 5/8" x req'd lg'th
o	2	Bolt, eye, 5/8" x req'd. length
p		Connectors, as required
aa	12	Nut, eye, 5/8"
ap	6	Clamp, hot line, tap assembly
aq		Jumpers
ca	12	Deadend assembly, primary
cc	2	Deadend assembly, neutral

NOTES

1. Construction shown on Dwg DC-C4 is preferred when practical.
2. Similar construction may be used for 30° to 60° angles if required.
3. Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C4AL, and change items in the material list as required.

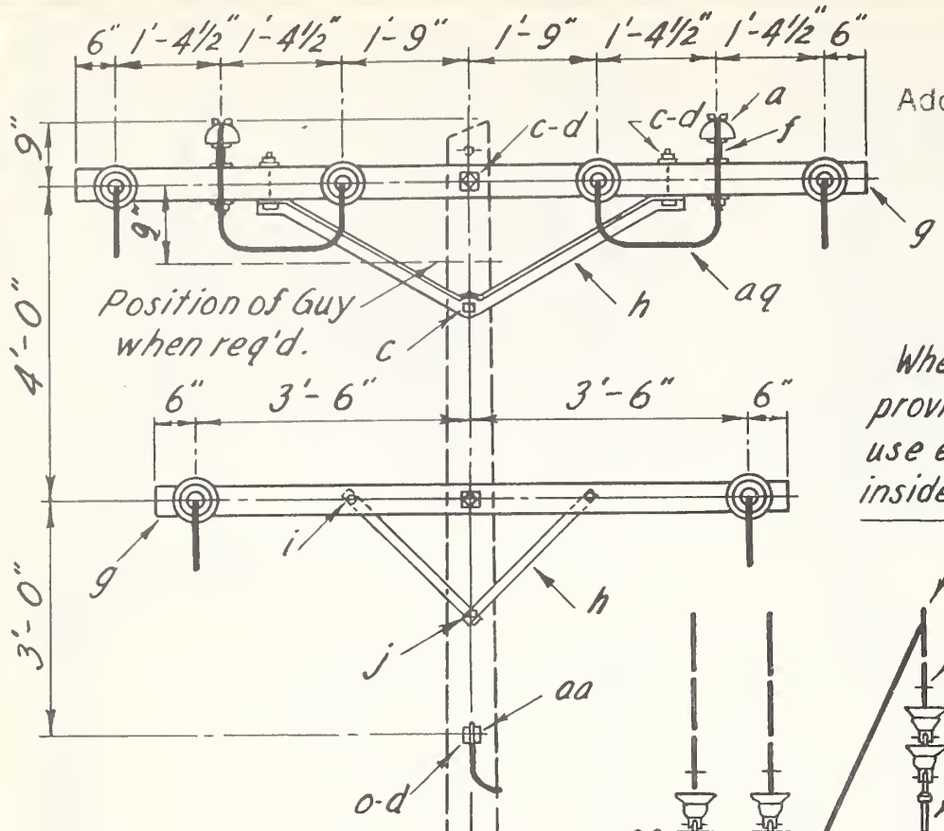
No.	Revision	Date
1	Reissued	8-56

7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
(DOUBLE CIRCUIT)
CROSSARM CONSTRUCTION-60° TO 90° ANGLE

Scale: ½" = 1'-0"

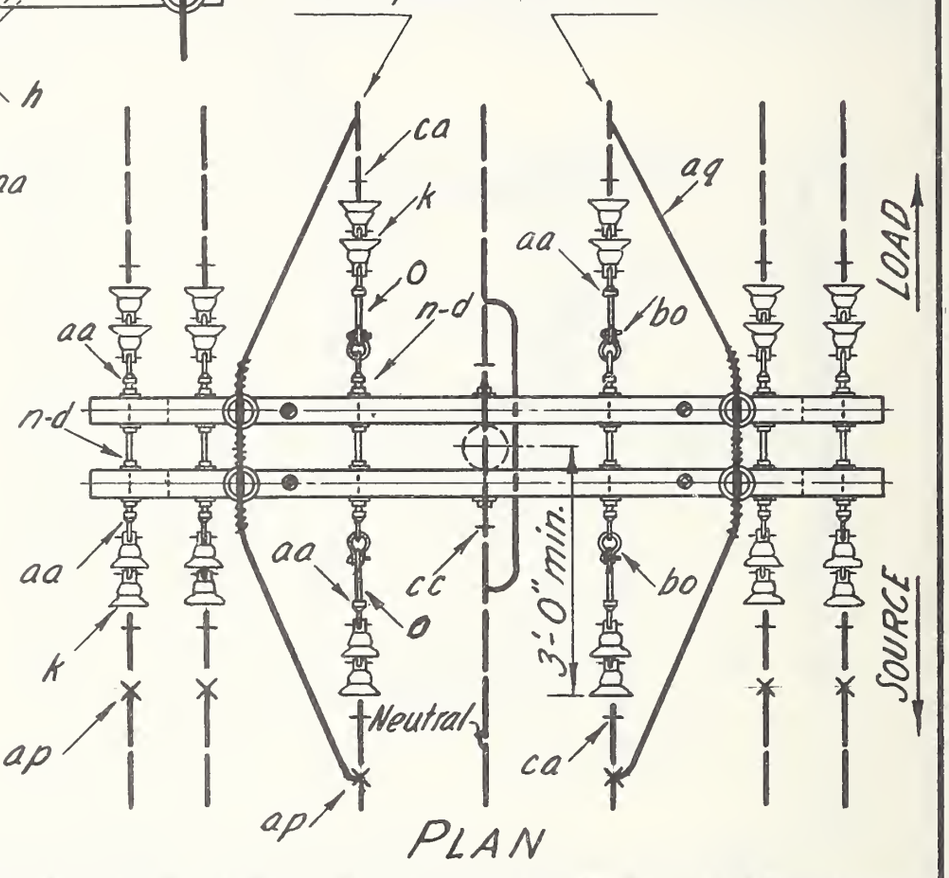
Date: Apr. 6, 1948

DC-C4A



Add Ground Assembly As Required

When climbing space must be provided above these conductors use extended deadends on the inside phase wires.



PLAN

NOTE:

Neutral may be carried through if deadending is not required.

When the line may be energized from either end, hot line clamps should be installed on both ends of the jumpers.

Where the heavier construction for larger conductors is desired, specify this assembly unit as DC-C8L, and change items in the material list as required.

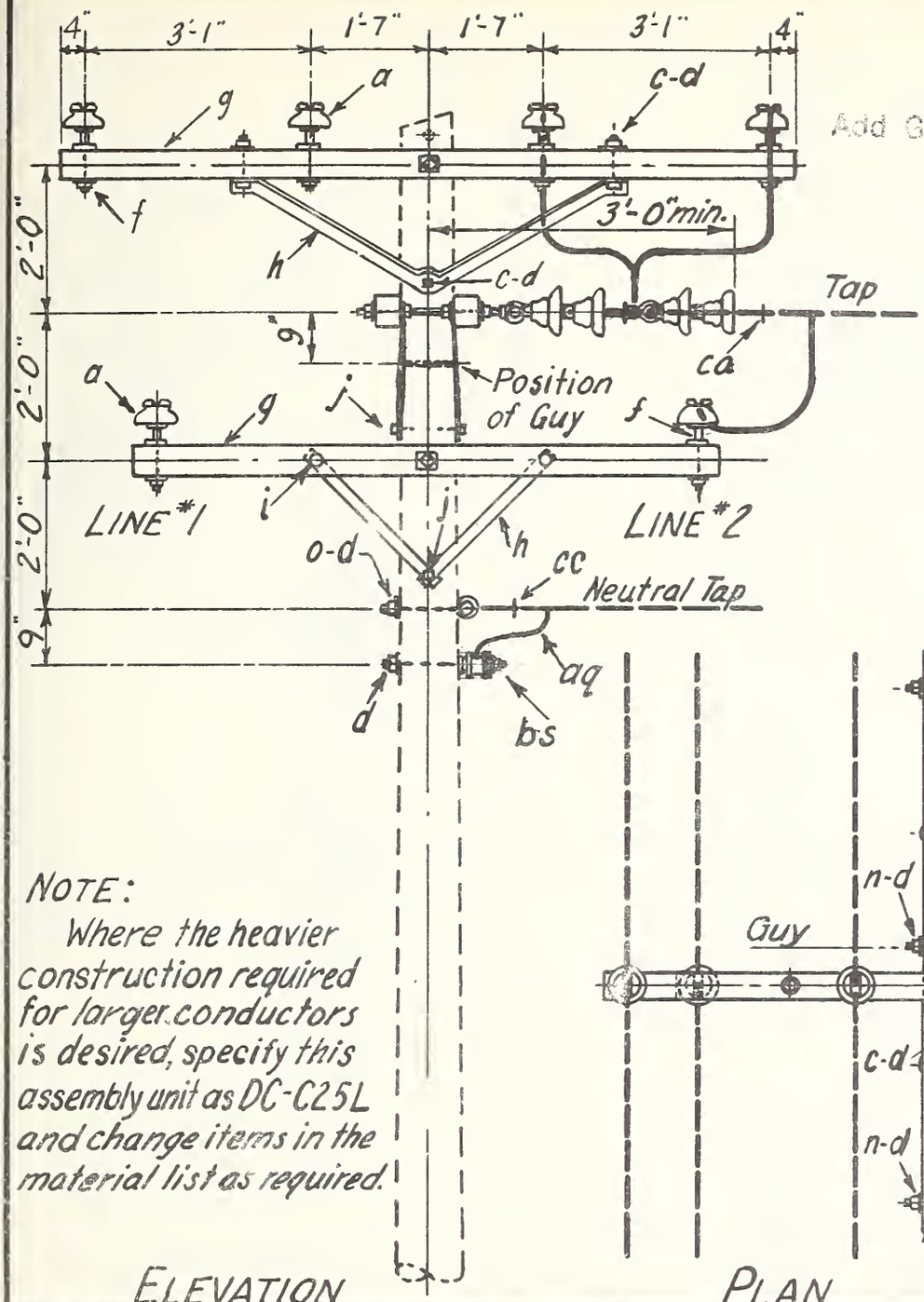
ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
a	4	Insulator, pin type		j	2	Screw, lag, ½" x 4½"	
c	3	Bolt, machine, ⅝" x req'd. length		k	24	Insulator, suspension	
c	4	Bolt, machine, ½" x req'd. length		n	6	Bolt, double arming, ⅝" x req'd. lgth.	
d	29	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		o	5	Bolt, eye, ⅝" x req'd. length	
d	4	Washer, round, 1⅜" dia. 9/16" hole		p		Connectors, as req'd.	
f	4	Pin, crossarm, steel, 1⅝" x 10¾"		aa	17	Nut, eye	
g	2	Crossarm, 3¾" x 4¾" x 10'-0" long		ap	6	Clamp, hot line, tap assembly	
g	2	Crossarm, 3½" x 4½" x 8'-0" long		aq		Jumpers or leads as req'd.	
h	2	Brace, angle, 1½" x 1½" x 3/16", 60° span		bo	4	Shackle, anchor	
h	4	Brace, flat, 1¼" x ¼" x 28" long		ca	12	Deadend assembly, primary	
i	4	Bolt, carriage, ⅜" x 4½"		cc	2	Deadend assembly, neutral	

7.2/12.5 KV. PRIMARY 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION - DOUBLE CIRCUIT DEADEND (DOUBLE)

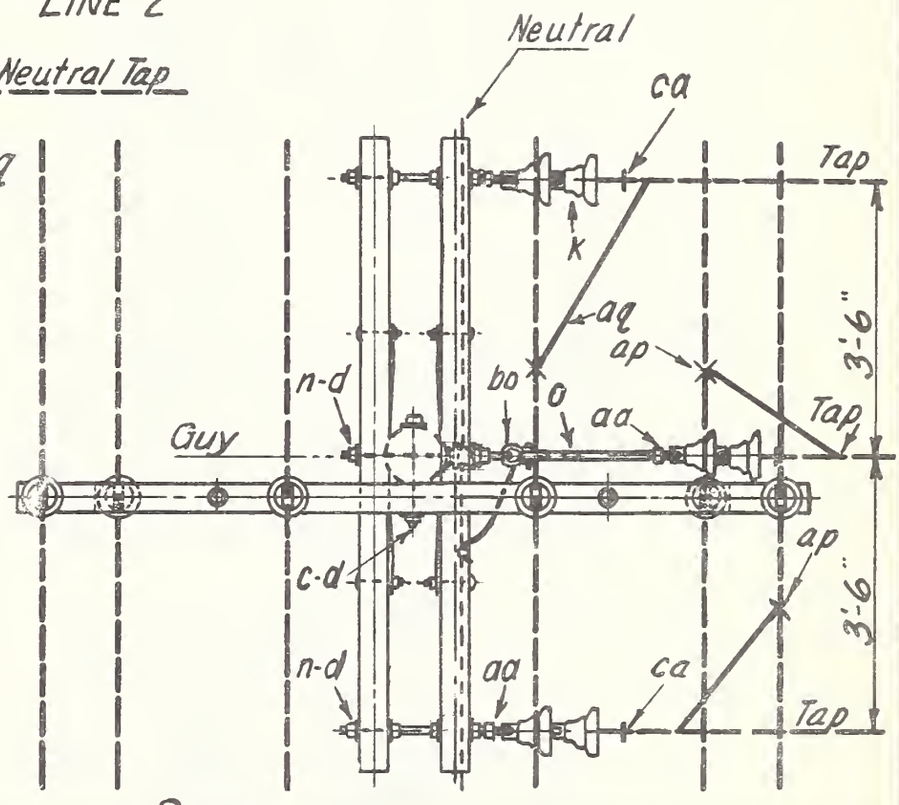
Scale: ⅜" = 1'-0" | 2X-ARM TYPE | Date: Jan. 4, 1949

DC-C8

NO.	REVISION	DATE:
1	Reissued	8-56



Add Ground Assembly As Required



NOTE:
Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C25L and change items in the material list as required.

ELEVATION

PLAN

ITEM	NO. REQ'D	MATERIAL
a	6	Insulator, pin type
c	3	Bolt, machine, 5/8" x req'd. length
c	2	Bolt, machine, 1/2" x req'd. length
d	17	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
d	2	Washer, round, 1 3/8" dia., 9/16" hole
f	6	Pin, steel, crossarm, 5/8" x 10 3/4"
g	1	Crossarm, 3 3/4" x 4 3/4" x 10'-0" lg.
g	3	Crossarm, 3 1/2" x 4 1/2" x 8'-0" lg.
h	1	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60" span
h	6	Brace, flat, 1/4" x 1/4" x 28" lg.
i	6	Bolt, carriage, 3/8" x 4 1/2"
p		Connectors as req'd.

ITEM	NO. REQ'D	MATERIAL
j	3	Screw, lag, 1/2" x 4"
k	6	Insulator, suspension
n	2	Bolt, double arming, 5/8" x req'd. length
o	2	Bolt, eye, 5/8" x req'd. length
ca	3	Deadend assembly, primary
aa	4	Nut, eye, 5/8"
ap	3	Clamp, hot line, tap assembly
aq		Jumpers or leads as req'd.
bo	1	Shackle, anchor
bs	1	Bolt, single upset, insulated
cc	1	Deadend assembly, neutral

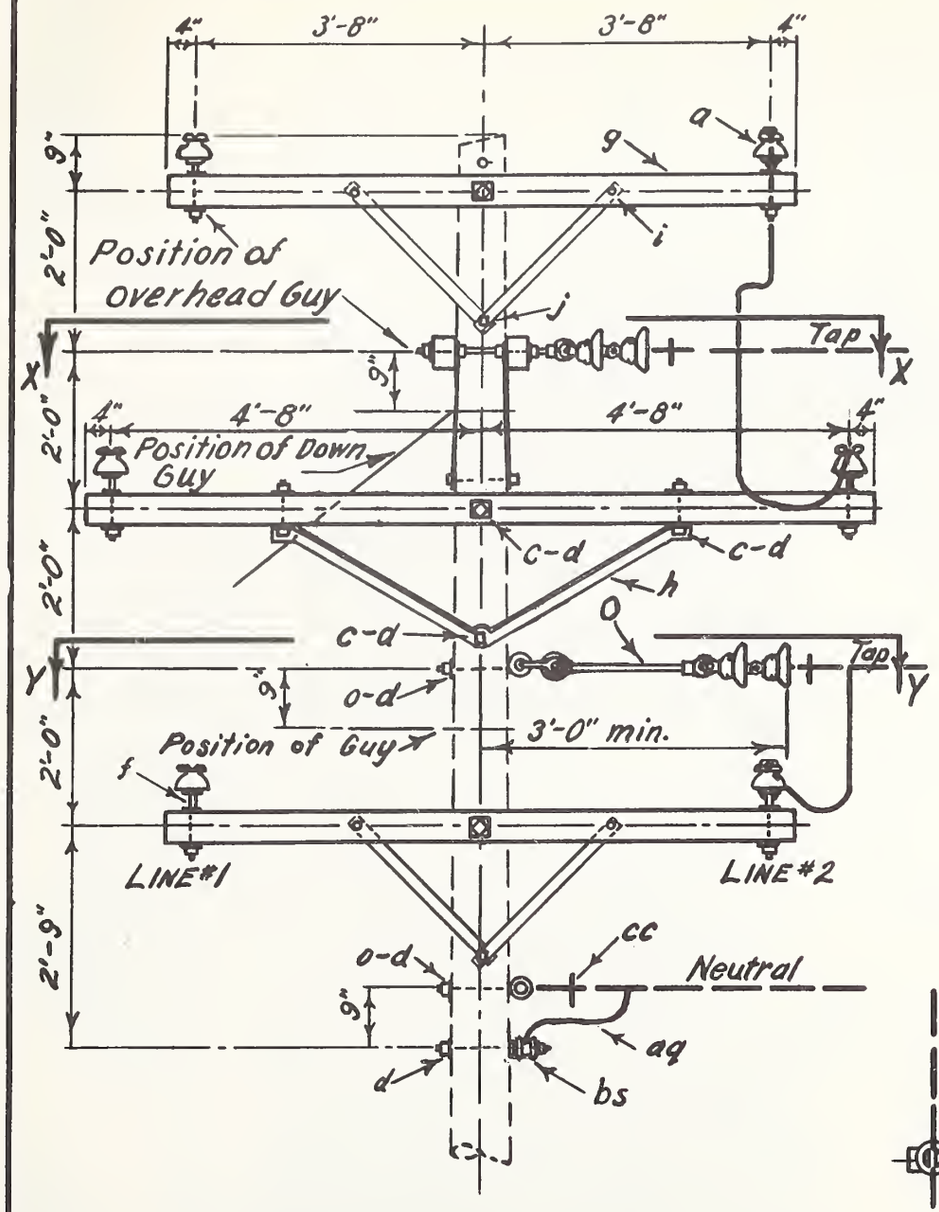
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION - DOUBLE CIRCUIT 3-PHASE TAP AT 0° TO 5° ANGLE

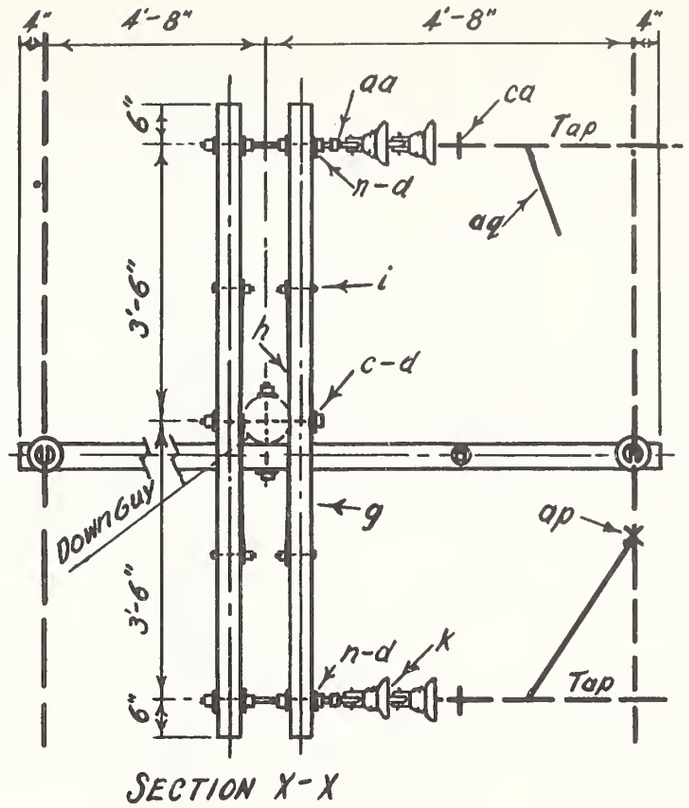
No.	REVISION	DATE
1	Revised	9-55

Scale: 3/8" = 1'-0"

Date: Apr. 23, 1948

DC-C25

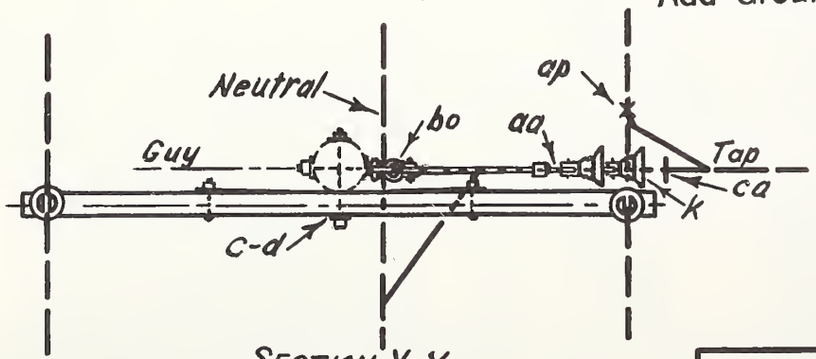




SECTION X-X

ITEM	NO. REQD	MATERIAL
a	6	Insulator, pin type
c	5	Bolt, machine, ⅝" x req'd. length
c	2	Bolt, machine, ½" x req'd. length
d	20	Washer, 2¼" x 2¼" x ⅜", 1⅛" hole
d	2	Washer, round, 1⅜" dia., ⅝" hole
f	6	Pin, crossarm, steel, ⅝" x 10¾"
g	1	Crossarm, 3½" x 4¾" x 10'-0" long
g	4	Crossarm, 3½" x 4½" x 8'-0" long
h	1	Brace, angle, 1½" x 1½" x ⅜", 60° span
h	8	Brace, flat, 1¼" x ¼" x 28" long
i	8	Bolt, carriage, ⅝" x 4½"
j	4	Screw, lag, ½" x 4"
k	6	Insulator, suspension
n	2	Bolt, double arming, ⅝" x req'd. lgth.
o	3	Bolt, eye, ⅝" x req'd. length
p		Connectors, as req'd.
aa	3	Nut, eye, ⅝"
ap	3	Clamp, hot line, tap assembly
aq		Jumpers, as req'd.
bo	1	Shackle, anchor
bs	1	Bolt, single upset, insulated
ca	3	Deadend assembly, primary
cc	1	Deadend assembly, neutral

Add Ground Assembly As Required



SECTION Y-Y

NOTE:

Where the heavier construction required for large conductors is desired, specify this assembly unit as DC-C25AL and change items in material list as required.

No.	Revision	Date
1	Revised	9-55

7.2/12.5 Kv. PRIMARY, 3-PHASE 4-WIRE STAR CROSSARM CONSTRUCTION - DOUBLE CIRCUIT 3-PHASE TAP AT 0° TO 5° ANGLE

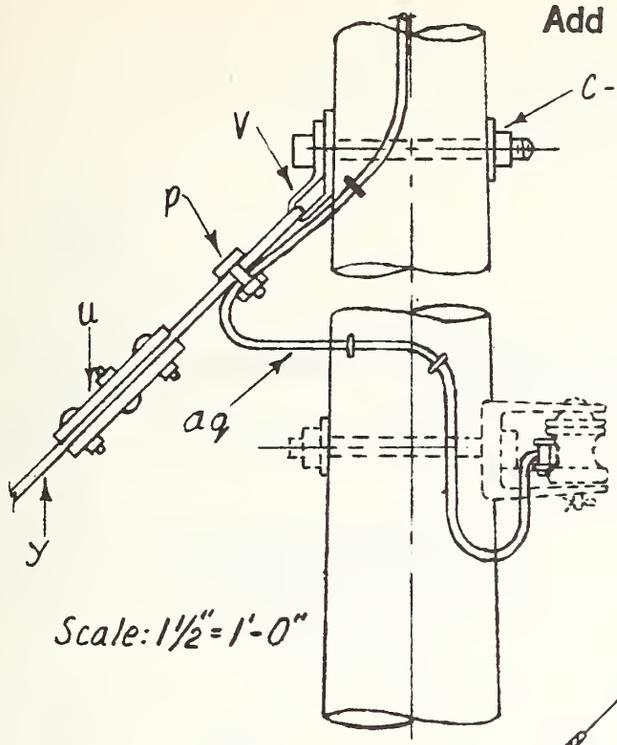
Scale: ⅜"=1'-0

3X-ARM TYPE

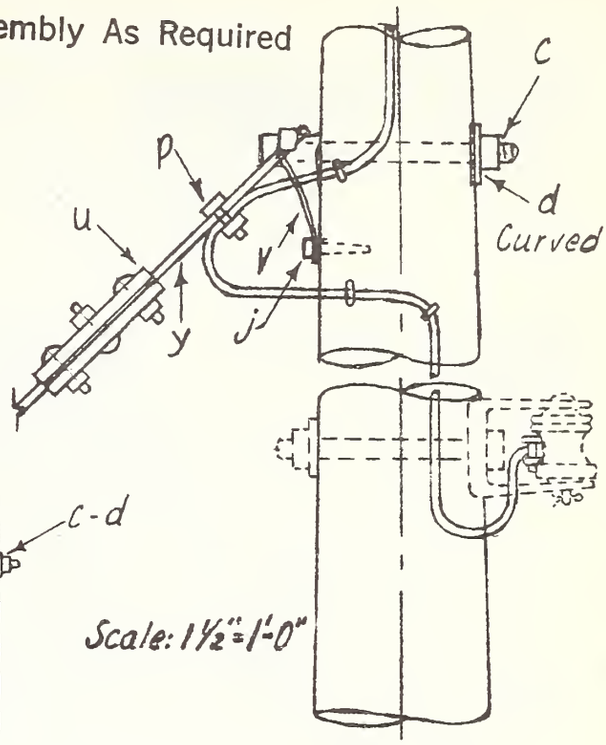
Feb. 15, 1949

DC-C25A

Add Ground Assembly As Required



Scale: 1½"=1'-0"

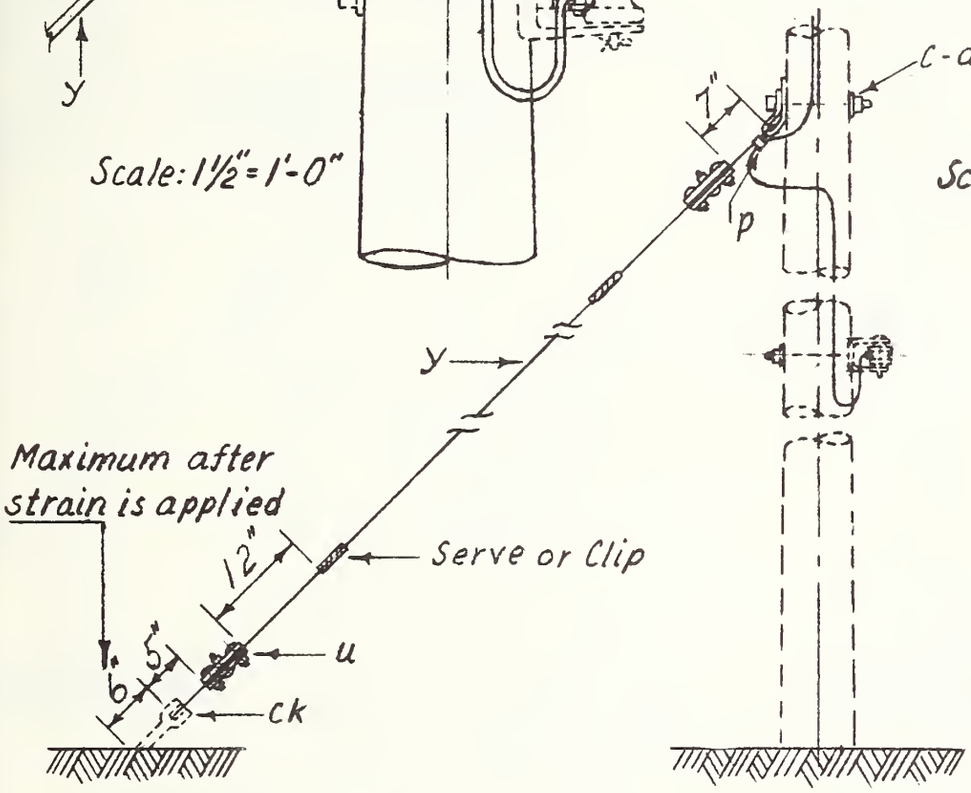


Scale: 1½"=1'-0"

E 1-3

This may be substituted for wrapped type guy, using attachment shown.

Connect jumper to neutral or ground wire.



See guide drawings M30-1 and M30-2

		ASSEMBLY UNIT			
		E 1-1 ¼" Guy Wire	E 1-2 ⅜" Guy Wire	E 1-3 7/16" Guy Wire	
ITEM	MATERIAL	No. REQ'D.	No. REQ'D.	No. REQ'D.	
c	Bolt, machine, ⅝" x req'd. length	1	1	1	
d	Washer, 2¼" x 2¼" 3/16", 13/16" hole	1	1		
d	Washer, curved, 3" x 3" x 5/16", 11/16" hole			1	
j	Screw, lag, ½" x 4"			1	
p	Connectors, as required				
u	Clamp, guy, 3-bolt, 6" long	2-Medium Duty	2-Medium Duty	2-Heavy Duty	
v	Guy attachment	1	1	1	
y	Guy Wire, S.M., 7-Strand	req'd. length	req'd. length	req'd. length	
ck	Clamp, anchor rod bonding	1	1	1	
aq	Jumper #6 S.D. copper or equiv	1	1	1	

7.2/12.5 KV.

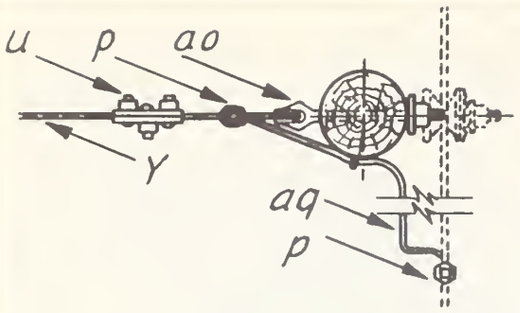
SINGLE DOWN GUY, THROUGH BOLT TYPE

Scale: ½"=1'-0"

Date: Mar. 15, 1949

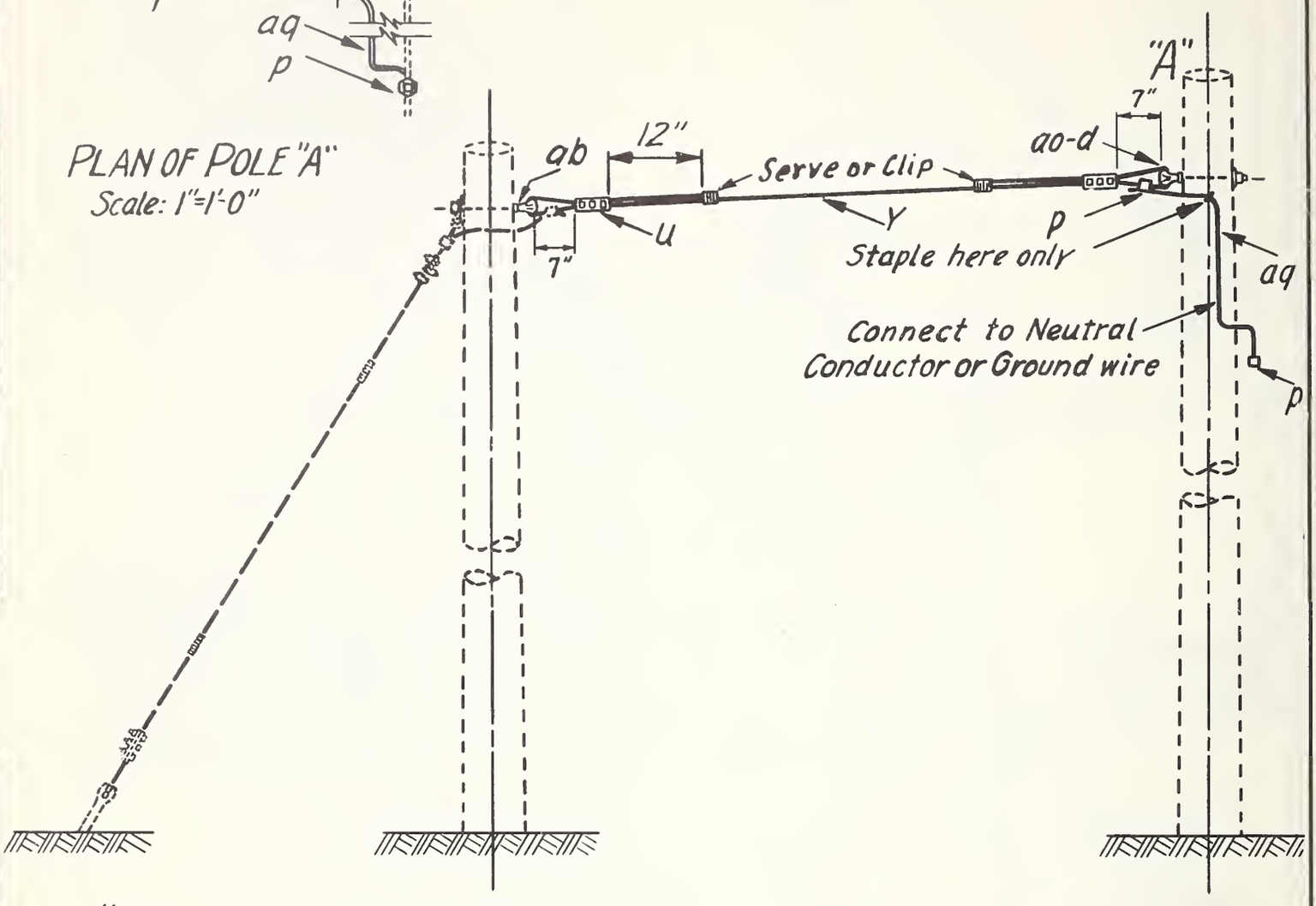
E1-1, E1-2, E1-3

No.	REVISION	Date
1	Revised	7-12-56



PLAN OF POLE "A"
Scale: 1"=1'-0"

Add Ground Assembly As Required



NOTE:
When the guy tension is more than 5200 pounds use wrapped type guy.

		ASSEMBLY UNIT			
		E2-1 1/4" Guy Wire	E2-2 3/8" Guy Wire		
ITEM	MATERIAL	No REQ'D.	No REQ'D.		
d	Washer, 2¼" x 2¼" x 3/16", 13/16" hole	1	1		
u	Clamp, guy, 3-bolt, 6" long	2-Medium Duty	2-Medium Duty		
ab	Nut, thimble type eye, 5/8"	1	1		
Y	Guy Wire, S-M., 7-strand	req'd. length	req'd. length		
ao	Bolt, thimbleye, 5/8" x req'd. length	1	1		
aq	Jumper, #6 S.D. or equivalent	1	1		
p	Connectors, as req'd.				

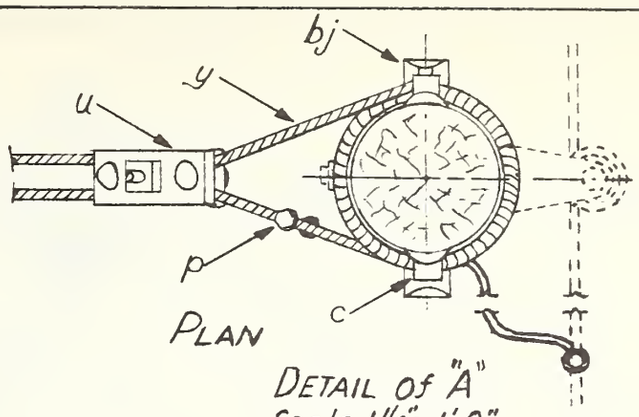
7.2/12.5 Kv.
SINGLE OVERHEAD GUY, THROUGH BOLT TYPE

NO.	REVISION	DATE:
1	Reissued	8-56

Scale: ½"=1'-0"

Date:

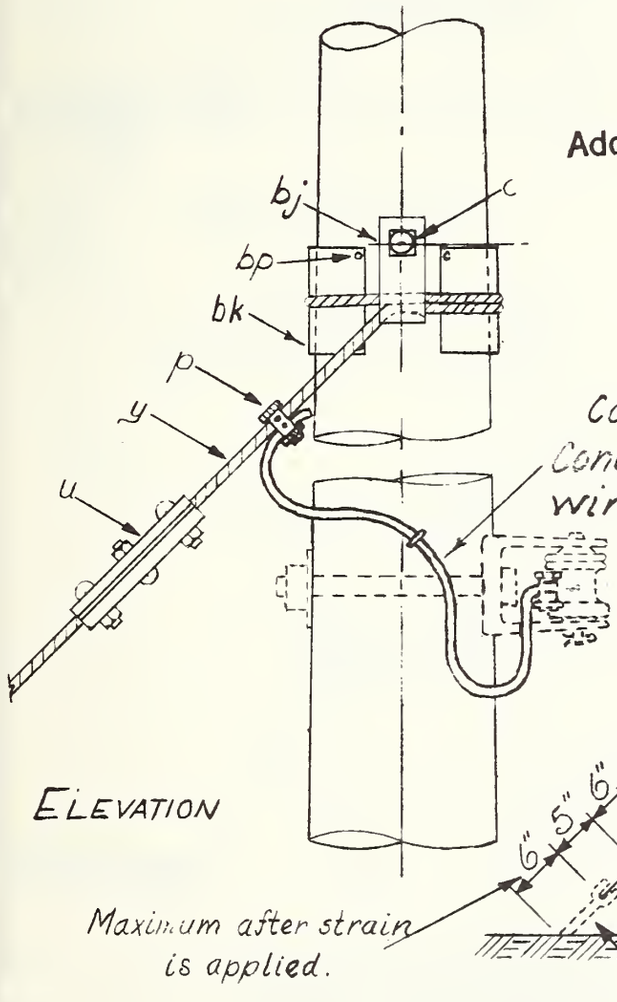
E2-1, E2-2



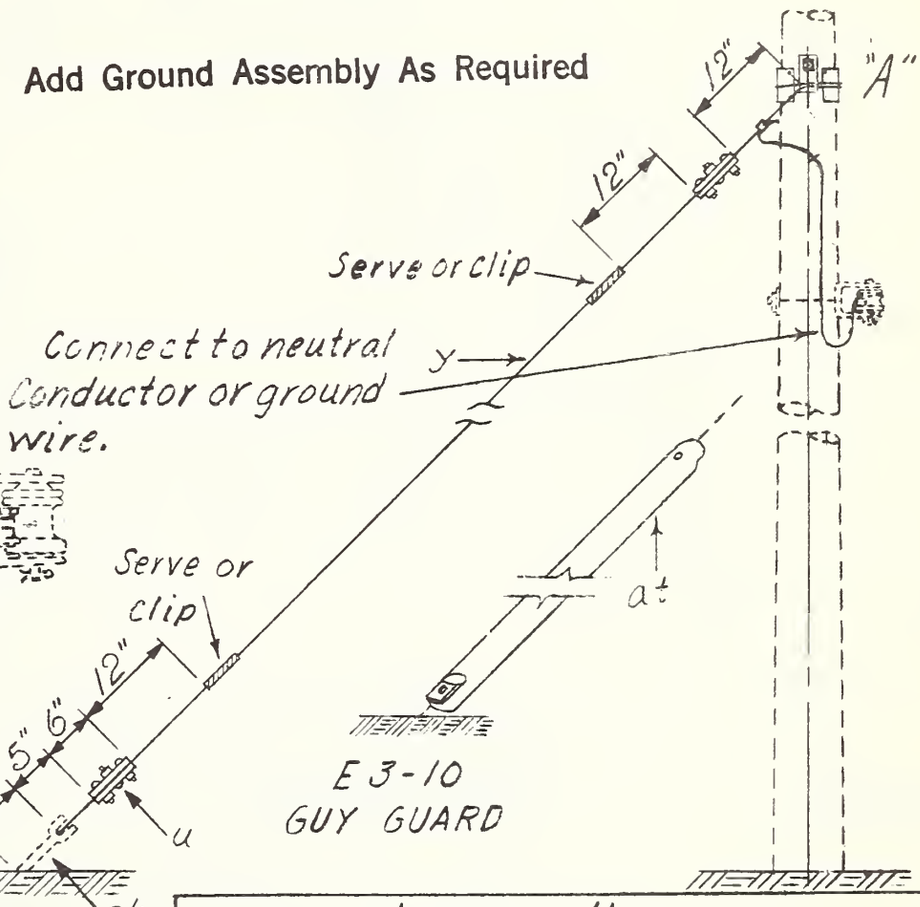
PLAN

DETAIL of "A"
Scale 1½"=1'-0"

Add Ground Assembly As Required



ELEVATION



E 3-10
GUY GUARD

See guide drawings M30-1 and M30-2

ITEM	MATERIAL		ASSEMBLY UNIT E3-2 3/8" Guy Wire No. Req'd.	E3-3 7/16" Guy Wire No. Req'd.	E 3-10 Guy Guard
p	Connectors, as req'd.				
c	Bolt, machine, 5/8" x req'd. length		1	1	
u	Clamp, guy, 3-bolt, 6" long		2-Medium Duty	2-Heavy Duty	
y	Guy Wire, S-M, 7-strand		req'd. length	req'd. length	
aq	Jumper #6 S.D. copper or equiv.				
bj	Guy Hook, J		2	2	
bk	Guy Plate, 4" x 8", 14 guage		2	2	
bp	Nail, 8 penny		8	8	
ck	Clamp, anchor rod bonding		1	1	
at	Guy guard, 8' min. length				1

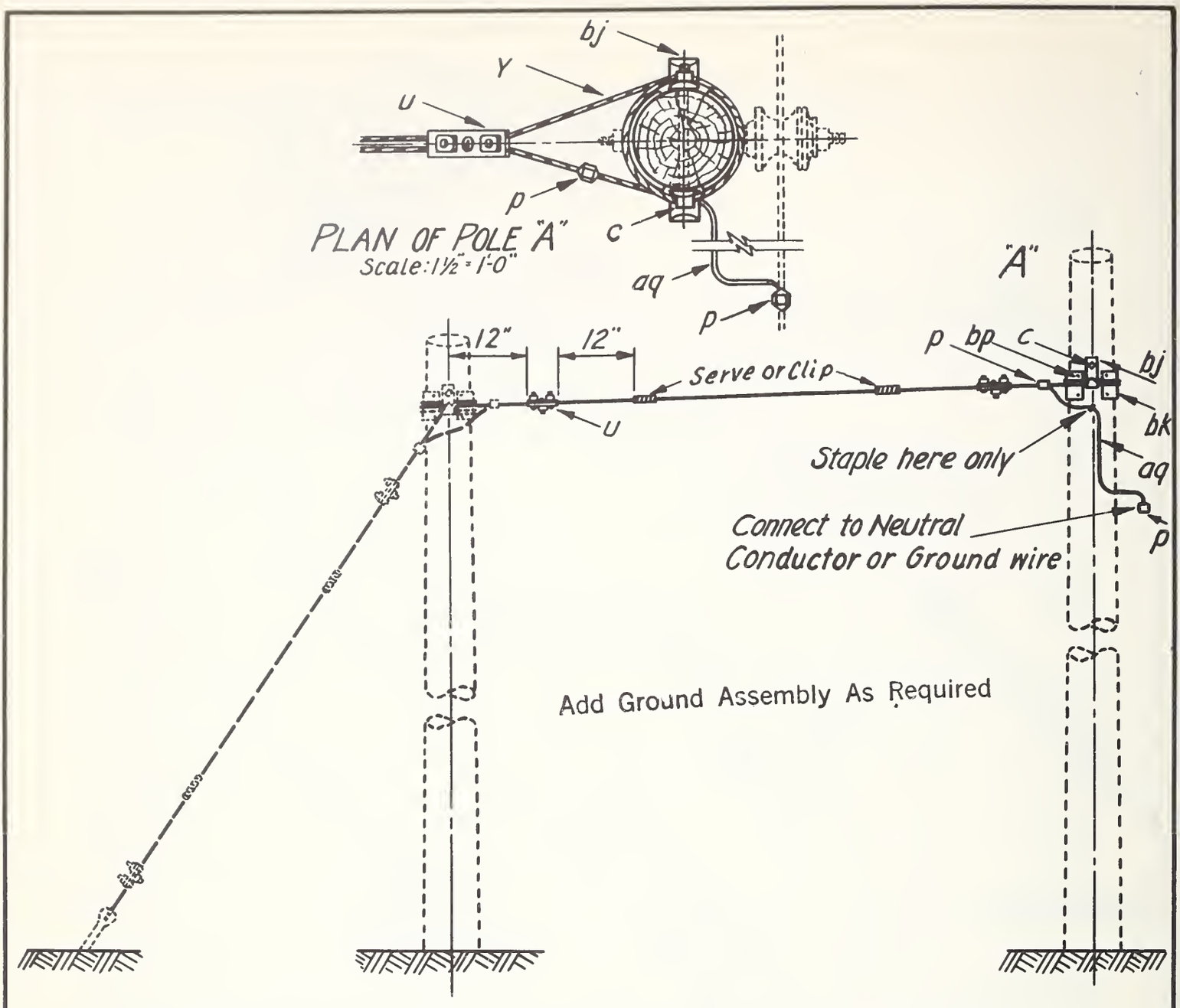
No.	Revision	Date:
1	Revised	7-12-56

7.2/12.5 KV.
SINGLE DOWN GUY, WRAPPED TYPE

Scale: ½"=1'-0"

Date: April 19, 1949

E3-2, E3-3, E3-10



		ASSEMBLY UNIT		
		E4-2 3/8" Guy Wire	E4-3 7/16" Guy Wire	
ITEM	MATERIAL	No. REQ'D	No. REQ'D.	
c	Bolt, machine, 5/8" x req'd. length	1	1	
p	Connectors, as req'd.			
u	Clamp, guy, 3-bolt, 6" long	2-Medium Duty	2-Heavy Duty	
Y	Guy Wire, S-M, 7-strand	req'd. length	req'd. length	
aq	Jumper, #6 S.D. or equivalent	1	1	
bj	Guy Hook, J	2	2	
bk	Guy Plate, 4"x8", 14 gauge	2	2	
bp	Nail, 8 penny	8	8	

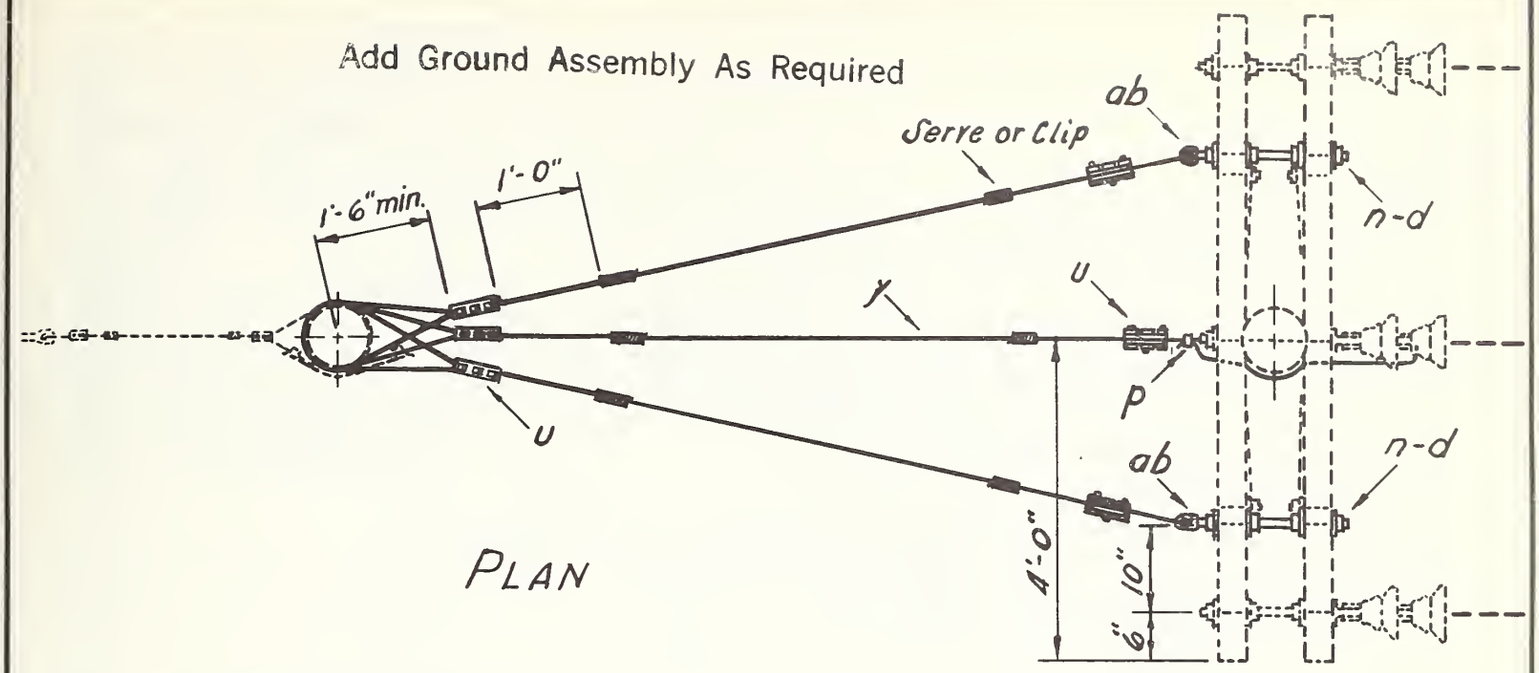
7.2/12.5 KV.
SINGLE OVERHEAD GUY, WRAPPED TYPE

NO.	REVISION	DATE:
1	Reissued	8-56

Scale: ½" = 1'-0"

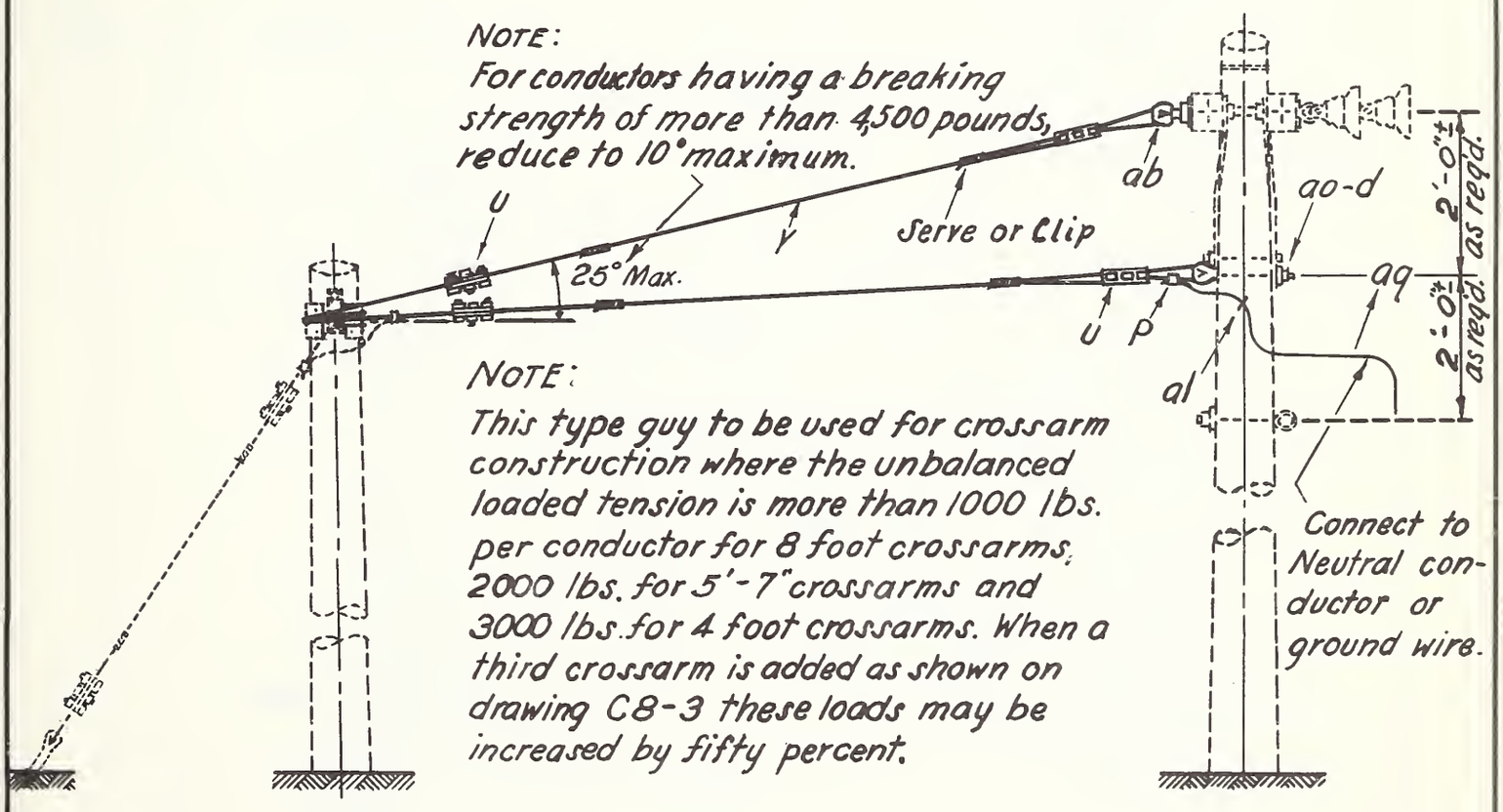
Date:

E4-2, E4-3



PLAN

NOTE:
For conductors having a breaking strength of more than 4,500 pounds, reduce to 10° maximum.



NOTE:
This type guy to be used for crossarm construction where the unbalanced loaded tension is more than 1000 lbs. per conductor for 8 foot crossarms, 2000 lbs. for 5'-7" crossarms and 3000 lbs. for 4 foot crossarms. When a third crossarm is added as shown on drawing C8-3 these loads may be increased by fifty percent.

Connect to Neutral conductor or ground wire.

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
d	9	Washer, 2¼"x 2¼"x 3/16", 13/16" hole		ab	2	Nut, thimble type eye, 5/8"	
n	2	Bolt, double arming, 5/8"x req'd. lg.		ao	1	Bolt, thimble type eye, 5/8"x req'd. length	
p		Connectors, as req'd.		aq		Jumper, #6 S.D. or equivalent	
u	6	Clamp, guy, 3 bolt, 6" lg., medium duty		al	1	Staple, ground wire	
y		Wire, guy, S.M. 7-strand, as req'd.					

7.2/12.5 KV.
DEADEND GUY
CROSSARM CONSTRUCTION

No.	REVISIONS	DATE
1	Reissued	8-56

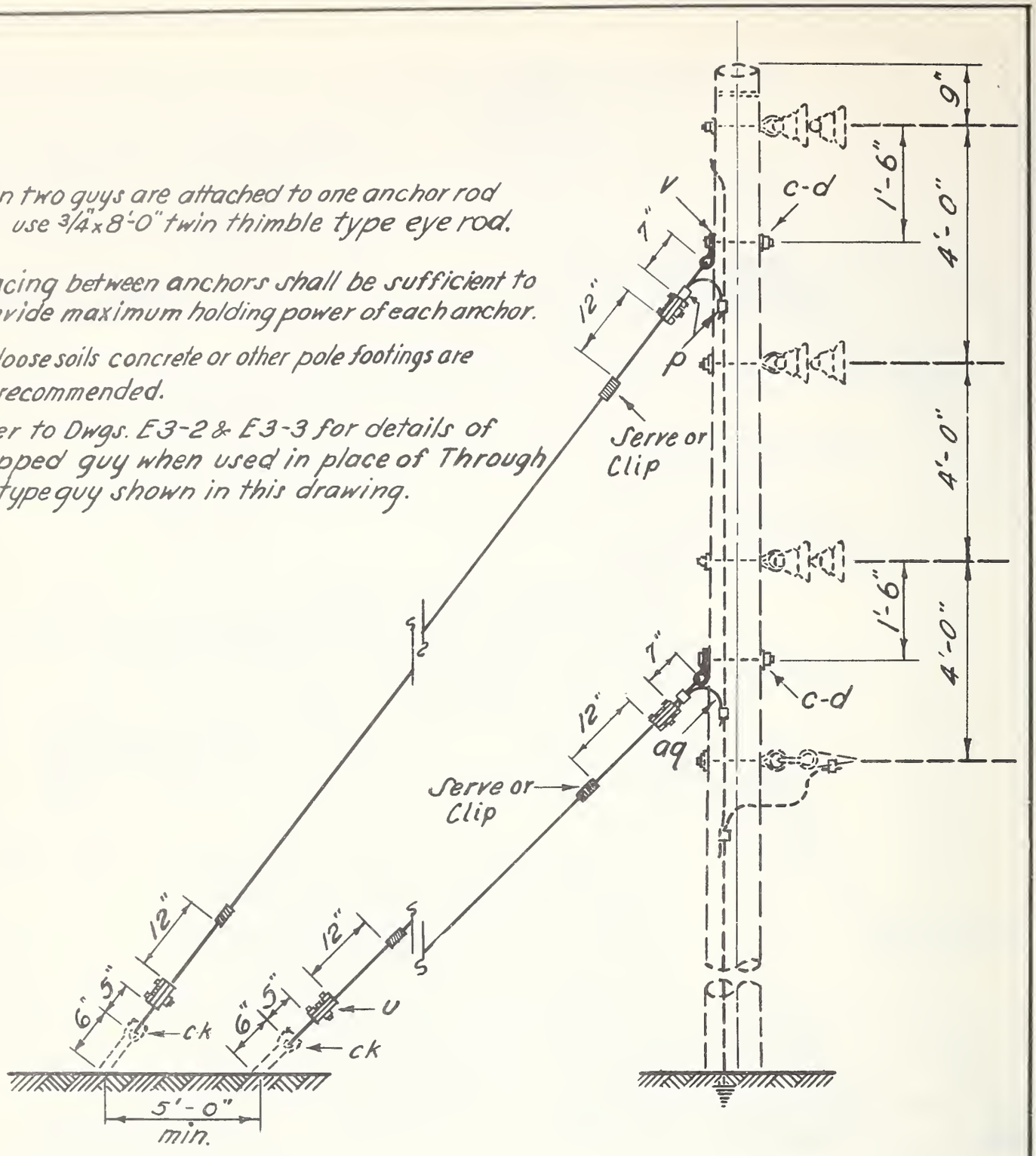
Scale: N.T.S.

Date: Apr. 13, 1948

E5-1

NOTES:

1. When two guys are attached to one anchor rod use 3/4"x8'-0" twin thimble type eye rod.
2. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
3. For loose soils concrete or other pole footings are recommended.
4. Refer to Dwgs. E3-2 & E3-3 for details of Wrapped guy when used in place of Through bolt type guy shown in this drawing.



ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
c	2	Bolt, machine, 5/8" x req'd. length		v	2	Guy attachment	
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		Y		Guy Wire, S-M., 7-strand	
p		Connectors, as required		aq		Jumpers, #6 S.D. or equivalent	
u	4	Clamp, guy, 3 bolt, 6" long		ck		Clamp, guy bond, as req'd.	

NO.	REVISION	DATE
1	Revised	4-56

7.2/12.5 KV. DOUBLE DOWN GUY

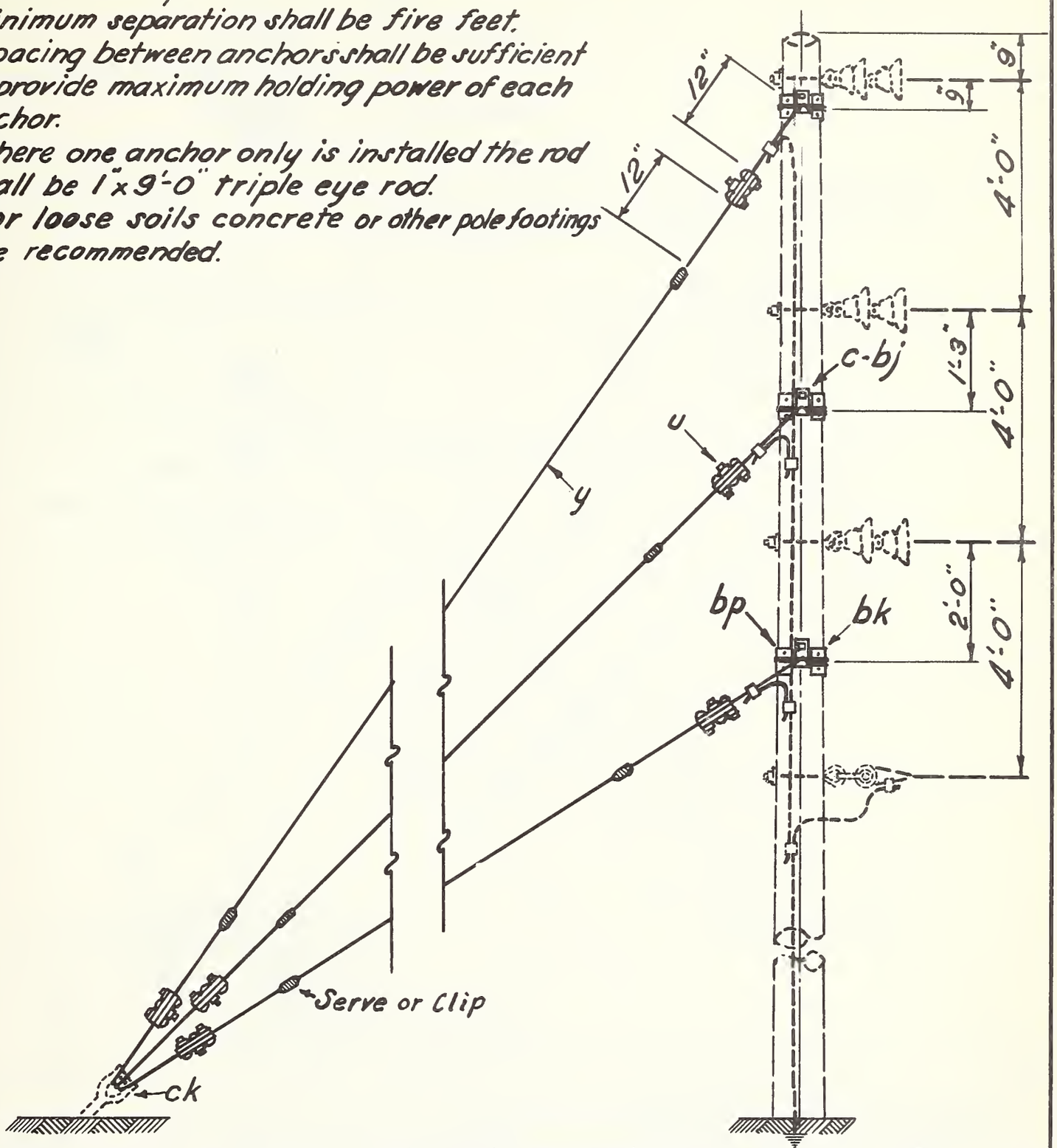
Scale: N.T.S.

Date: Mar. 30, 1948

E 6

Notes

1. Where three separate anchors are installed the minimum separation shall be five feet.
2. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
3. Where one anchor only is installed the rod shall be 1"x9'-0" triple eye rod.
4. For loose soils concrete or other pole footings are recommended.



ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
c	3	Bolt, machine, 5/8"x req'd. lg.		bp		Nail, 8 penny, as req'd.	
u	6	Clamp, guy, heavy, 3 bolt, 6" lg.		ck		Clamp, guy bond, as rq'd	
y		Guy Wire, S-M, 7-strand, as rq'd.					
bj	6	Guy Hook, "J"					
bk	6	Guy Plate, 4"x8", 14 gauge					

7.2/12.5 KV.
THREE DOWN GUYS
(LARGE CONDUCTORS)

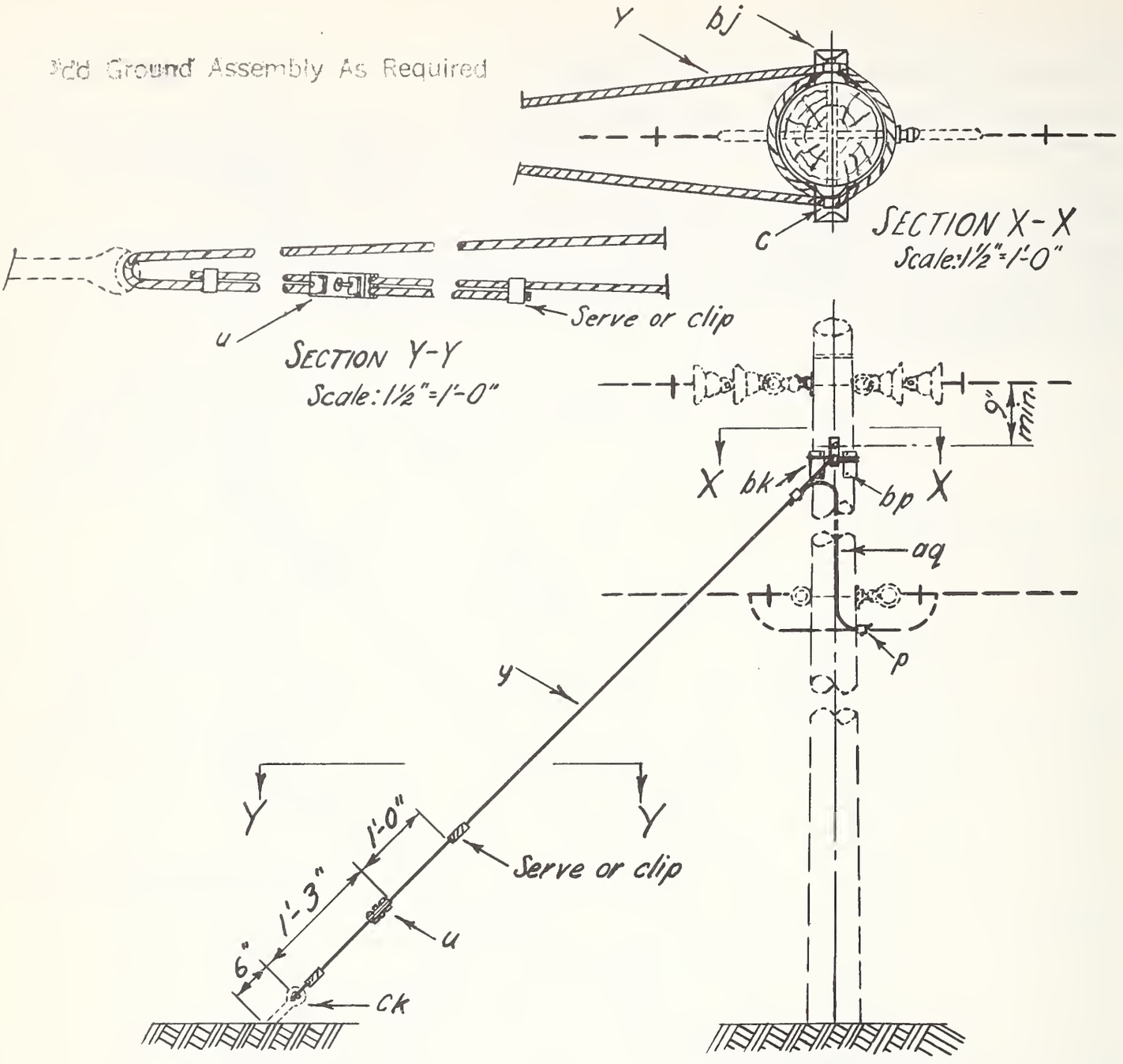
No.	REVISION	DATE
1	Revised	4-56

Scale: N.T.S.

Date: Mar. 30, 1948

E 7

Add Ground Assembly As Required



		ASSEMBLY UNIT			
		E 11 ¼" Guy Wire	E 12 ⅜" Guy Wire		
ITEM	MATERIAL	No. Req'd	No. Req'd		
c	Bolt, machine, ⅝" x req'd. length	1	1		
u	Clamp, Guy, 3-bolt, 6" long	1-Medium Duty	1-Medium Duty		
y	Guy Wire, S-M	req'd. length	req'd. length		
ck	Clamp, anchor rod bonding	1	1		
bj	Guy Hook, J	2	2		
bk	Guy Plate, 4" x 8", 14 guage	2	2		
bp	Nail, 8 penny	8	8		
aq	Jumper, #6 S.D. copper or equivalent				
p	Connectors, as req'd.				

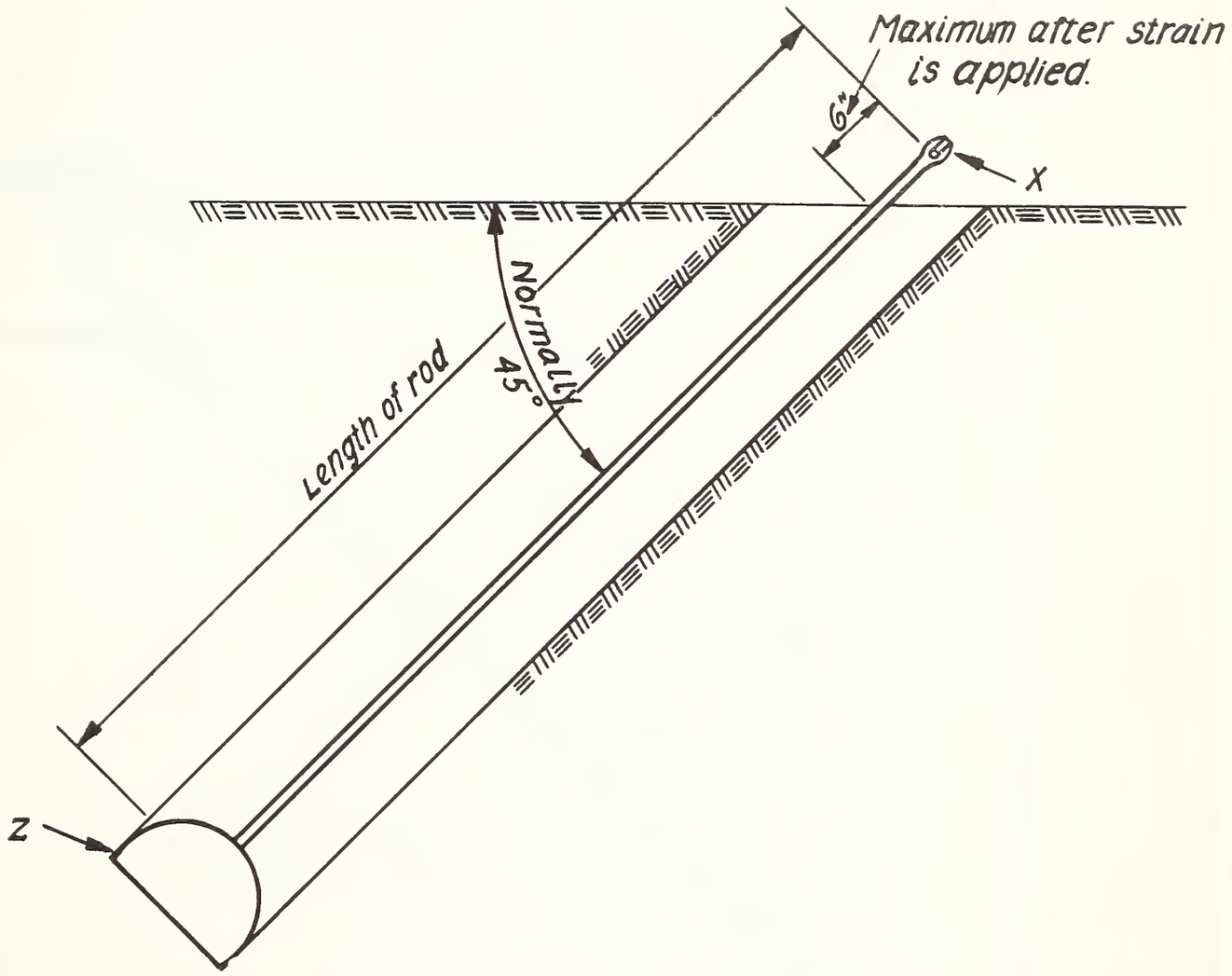
No.	REVISION	Date:
1	Reissued	8-56

7.2/12.5 KV.
SINGLE LOOP GUY, WRAPPED TYPE

Scale: ½"=1'-0"

Date: Dec. 14, 1948

E11, E12



		ASSEMBLY UNIT							
		F1-1		F1-2		F1-3		F1-4	
ITEM	MATERIAL	No. REQ'D.	TYPE	No. REQ'D.	TYPE	No. REQ'D.	TYPE	No. REQ'D.	TYPE
X	Rod, anchor, thimble type eye	1	5/8" x 7'-0"	1	5/8" x 7'-0"	1	3/4" x 8'-0"	1	3/4" x 8'-0"
Z	Anchor, Patent (holding power in ordinary soil)	1	6000#	1	8000#	1	10,000#	1	12,000#

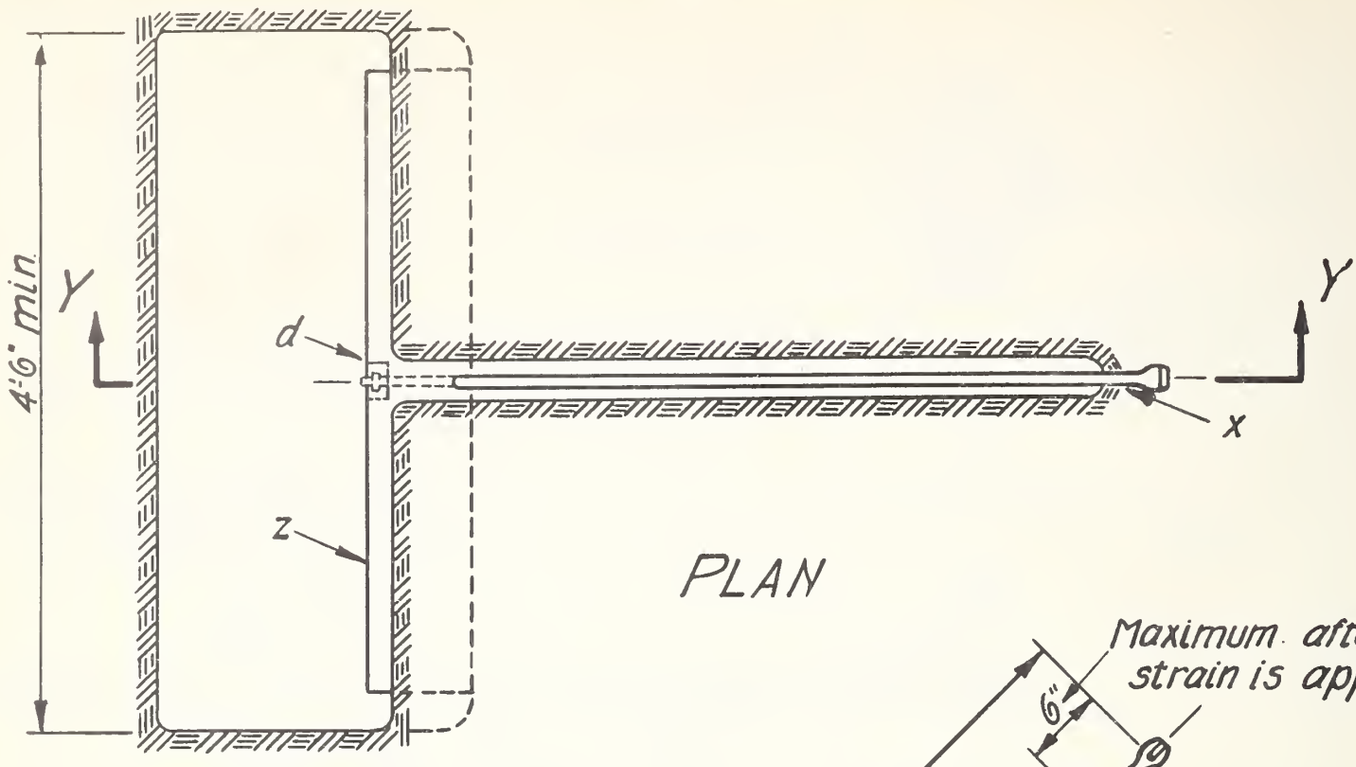
EXPANDING ANCHOR ASSEMBLY

NO.	REVISION	DATE:
1	Reissued	8-56

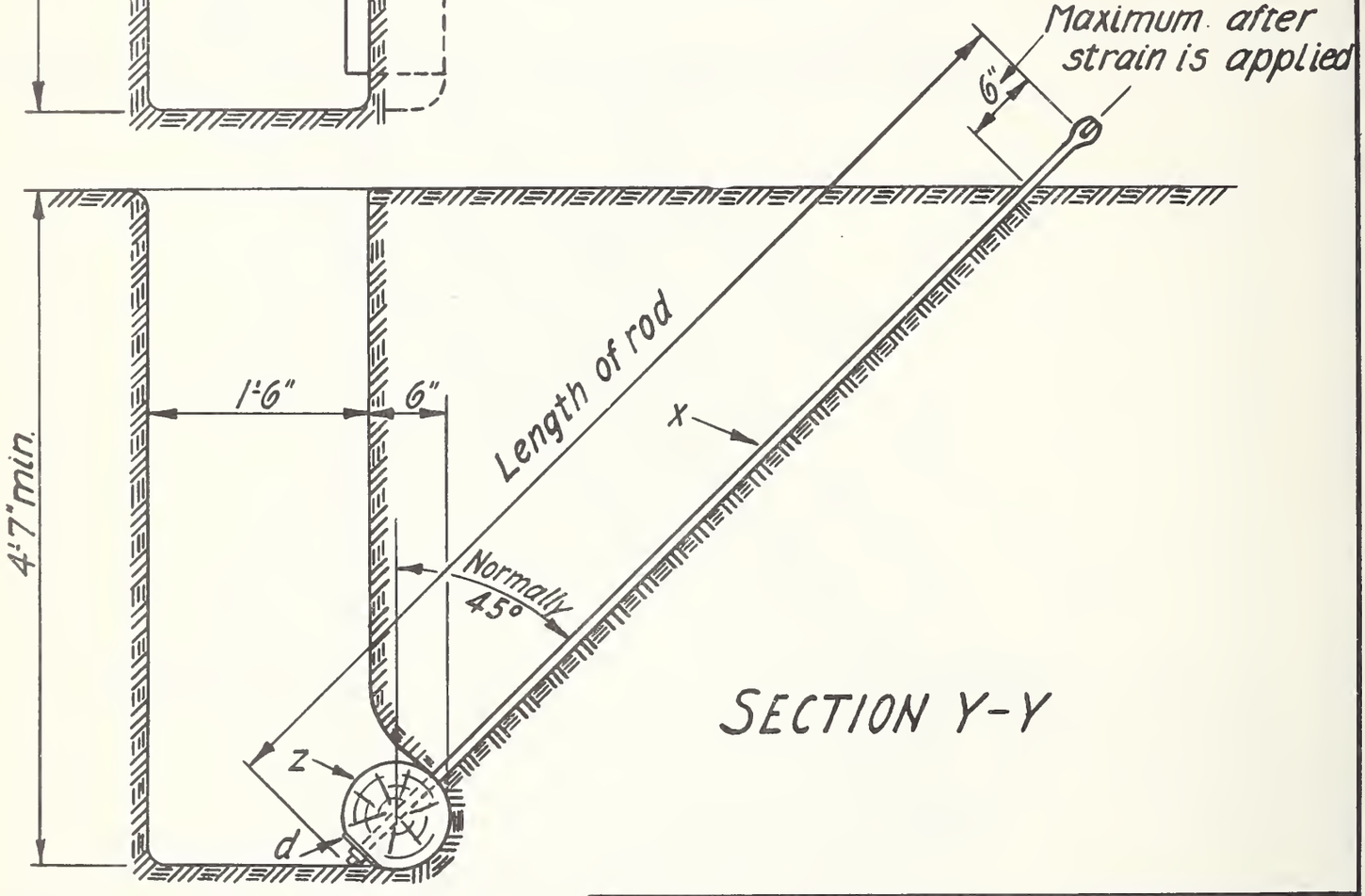
Scale: 3/4" = 1'-0"

Date:

F1-1, F1-2, F1-3, F1-4.



PLAN



SECTION Y-Y

		ASSEMBLY UNIT							
		F2-1		F2-2		F2-3		F2-4	
ITEM	MATERIAL	No. REQ'D.	TYPE	No. REQ'D.	TYPE	No. REQ'D.	TYPE	No. REQ'D.	TYPE
d	Washer, 13/16" hole (1 1/8" min. for F2-4)	1	4"x4"x1/2"	1	4"x4"x1/2"	1	4"x4"x1/2"	1	4"x4"x1/2"
x	Rod, anchor, thimble type eye	1	5/8"x 7'-0"	1	3/4"x 8'-0"	1	3/4"x 8'-0"	1	1"x 9'-0"
z	Anchor (creosoted log)	1	8" dia. x 4'-0"	1	9" dia. x 4'-6"	1	10" dia. x 5'-0"	1	12" dia. 5'-0"
	Holding power in ordinary soil		8000#		10000#		12000#		16,000#

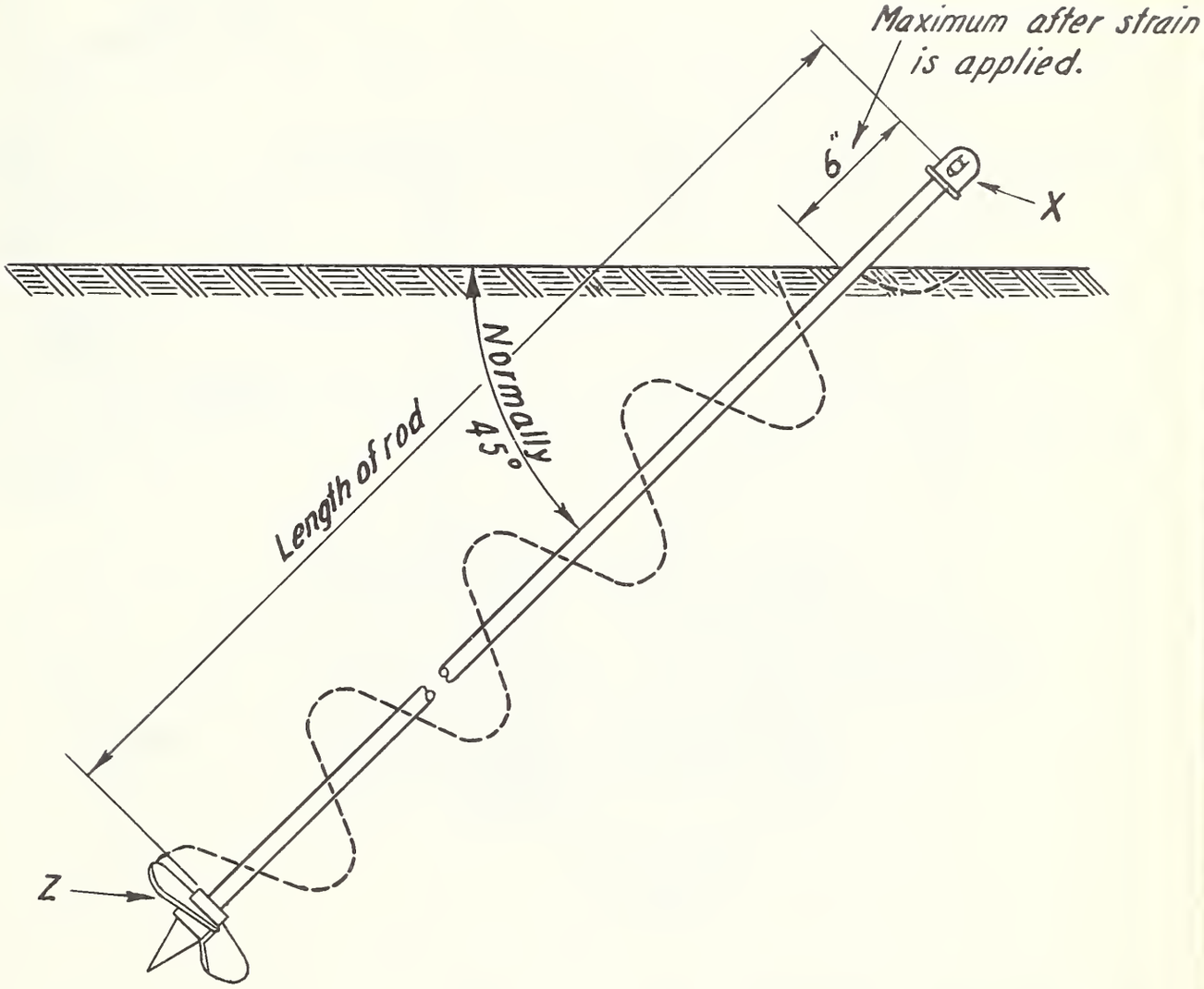
LOG ANCHOR ASSEMBLY

NO.	REVISION	DATE:
1	Reissued	8-56

Scale: 3/4"=1'-0"

Date:

F2-1 F2-2 F2-3 F2-4



		ASSEMBLY UNIT							
		F4-1							
ITEM	MATERIAL	NO. REQ'D.	TYPE						
X	Rod, anchor, thimble type eye	1	5/8"x5'-6"						
Z	Anchor, screw	1	6"						
	Holding power		2500#						

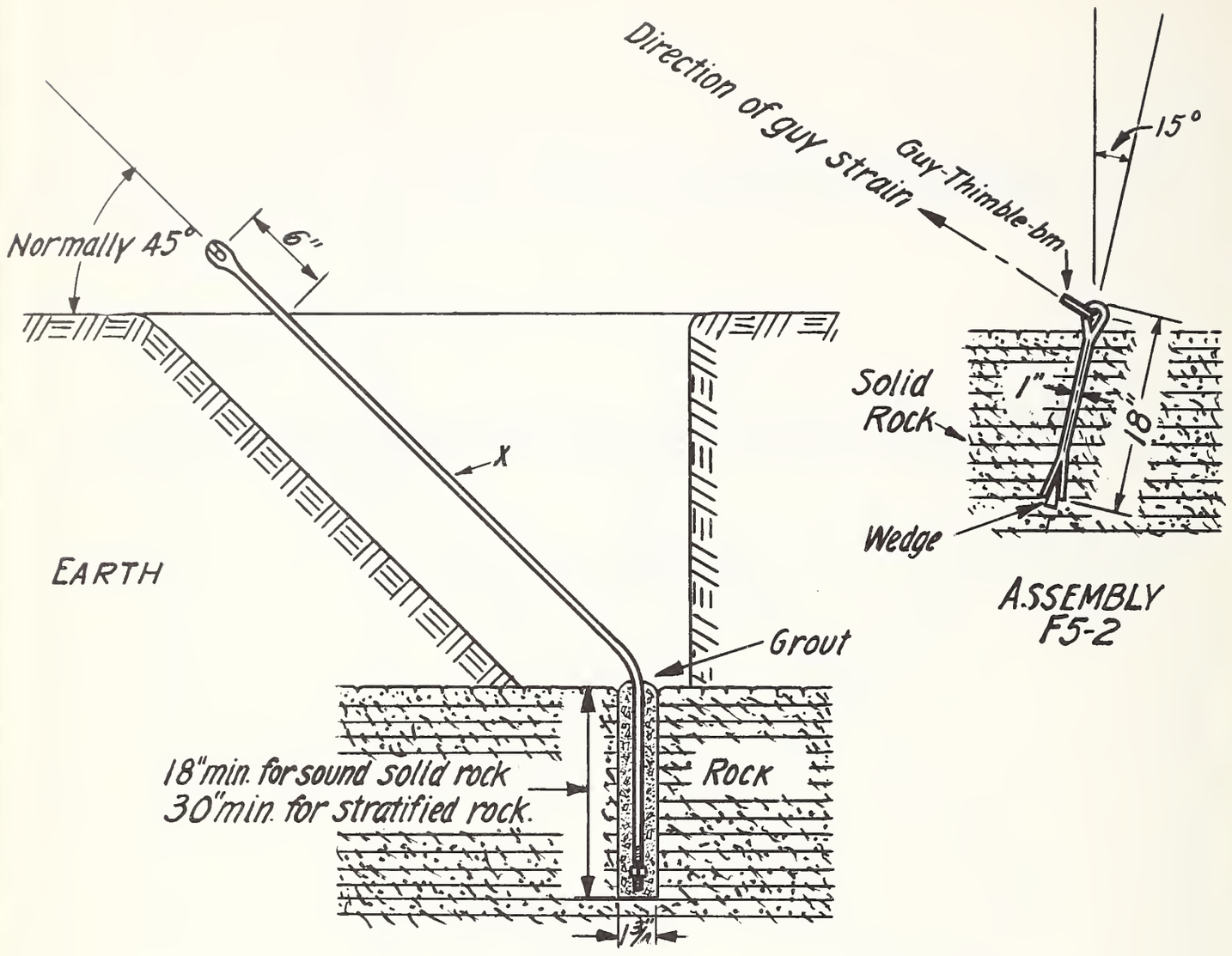
SCREW ANCHOR ASSEMBLY

No.	REVISION	DATE
1	Reissued	8-56

Scale: N.T.S.

Date: Aug. 10, 1948

F4-1



Notes:

1.- Only one guy shall be attached to a rock anchor. Where more than one guy is required space anchors 2 ft. minimum and where practical they shall be in direct line with pole.

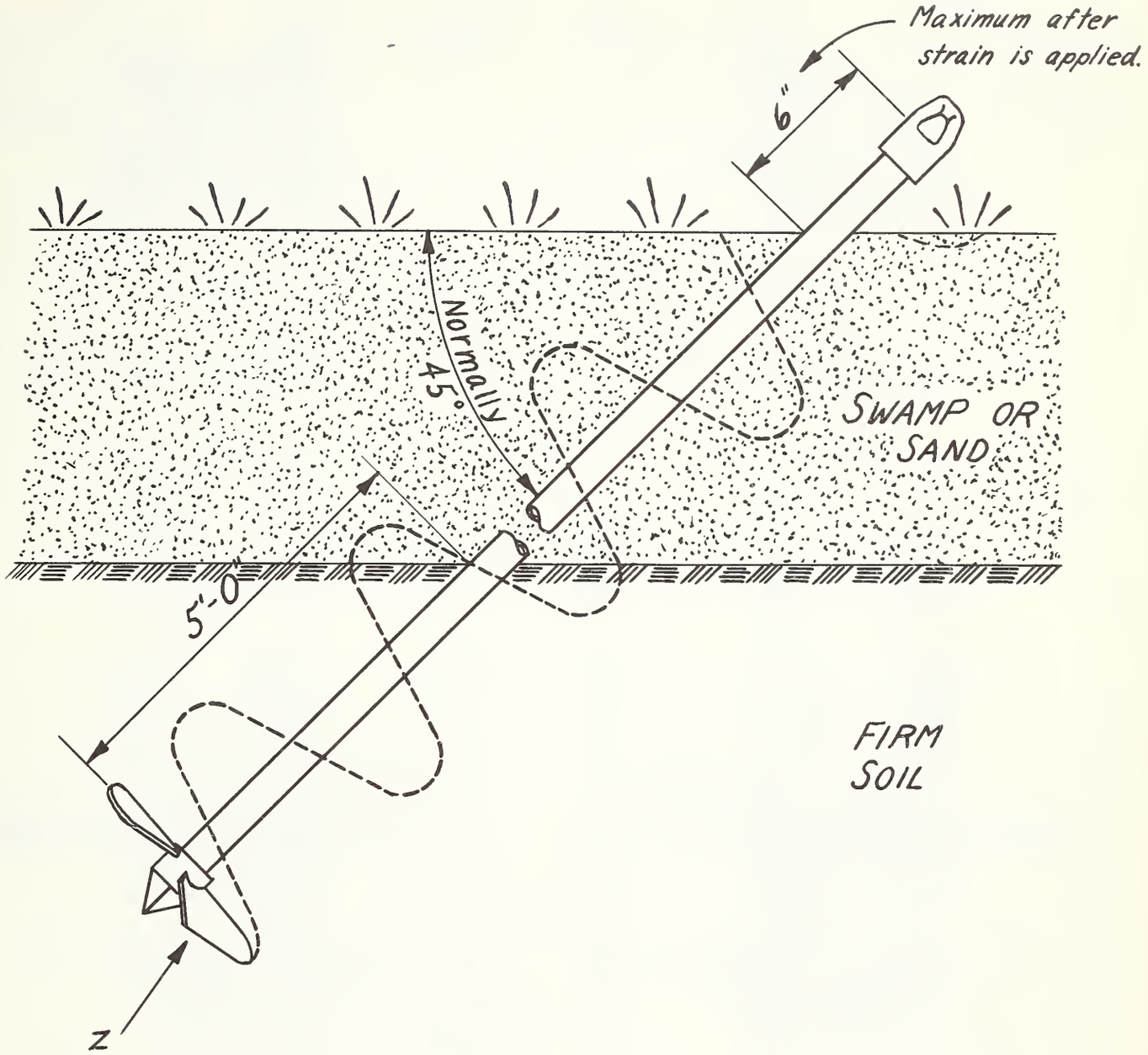
2.- Do not anchor to any boulder measuring less than 5 ft. in two directions at right angles to each other.

ROCK ANCHOR ASSEMBLY

No.	REVISION	DATE:
1	Reissued	8-56

Scale: 3/4"=1'-0"

Date: F5-1, F5-2



		ASSEMBLY UNIT							
		F6-1		F6-2		F6-3			
ITEM	MATERIAL	No. REQ'D	TYPE	No. REQ'D.	TYPE	No. REQ'D.	TYPE	No. REQ'D.	TYPE
Z	Anchor, swamp	1	10"	1	12"	1	15"		
	Holding power		6000#		8000#		10,000#		
	Nut, thimble type eye	1		1		1			
	Pipe, galvanized, length as req'd.								

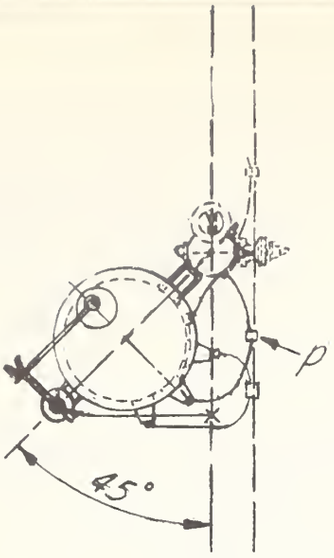
No.	REVISION	DATE
1	Reissued	8-56

SWAMP ANCHOR ASSEMBLY

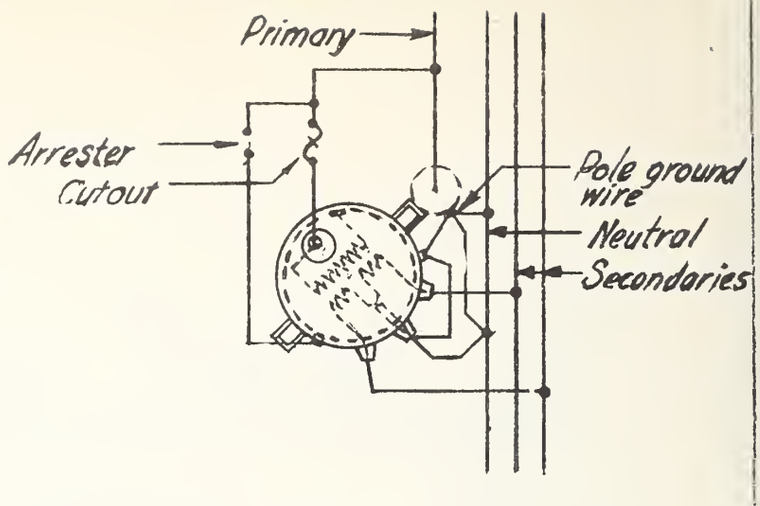
Scale: N.T.S.

Date: Aug. 10, 1948

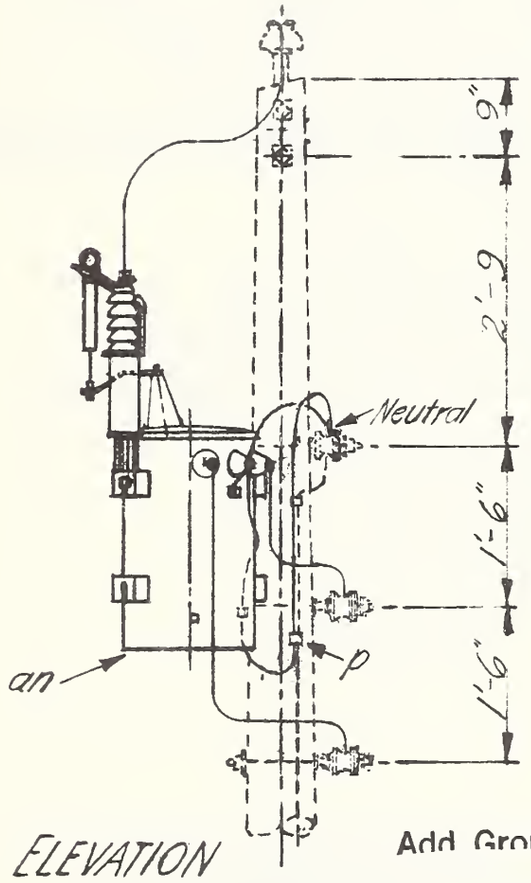
F6-1, F6-2, F6-3



PLAN

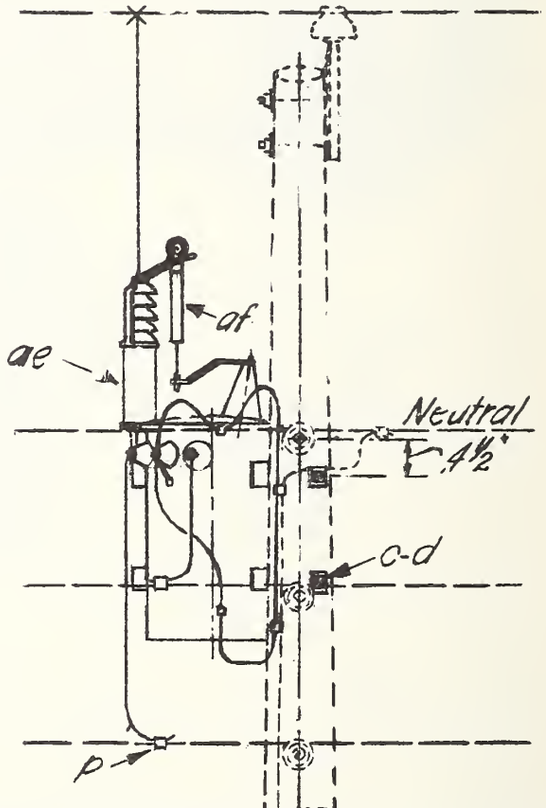


WIRING DIAGRAM



ELEVATION

Add Ground Assembly As Required



SIDE ELEVATION

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	1	Insulator, pin type		af	1	Cutout, fuse, single shot	
c	2	Bolt, machine, 5/8" x req'd. length		an	1	Transformer, coordinated conventional	
d	4	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		ap	1	Clamp, hot line	
p		Connectors, as required		ag		Leads, #6 S.D. copper or equiv.	
ae	1	Lightning arrester					

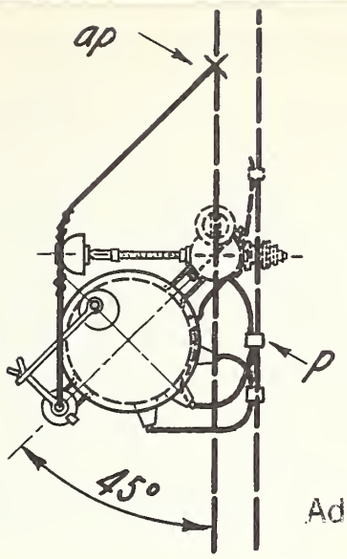
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED CONVENTIONAL TRANSFORMER WITH TANK MOUNTED CUTOUT AND LIGHTNING ARRESTER

Scale: ½"=1'-0"

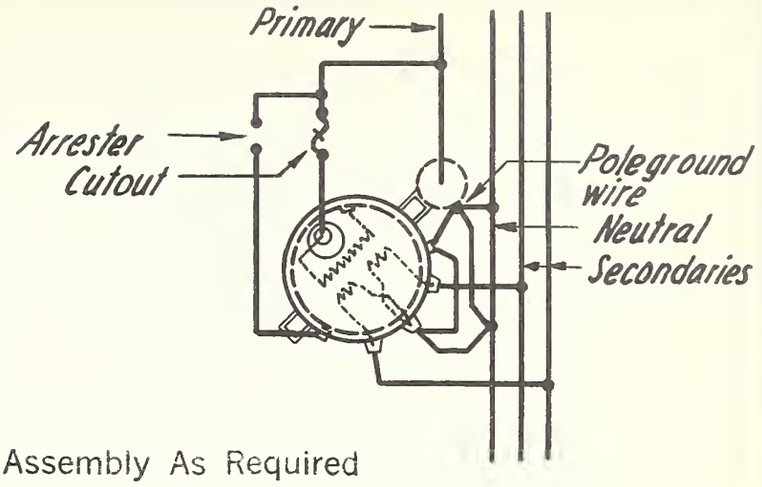
Date: July 12, 1956

G 9-1½

No.	REVISION	Date

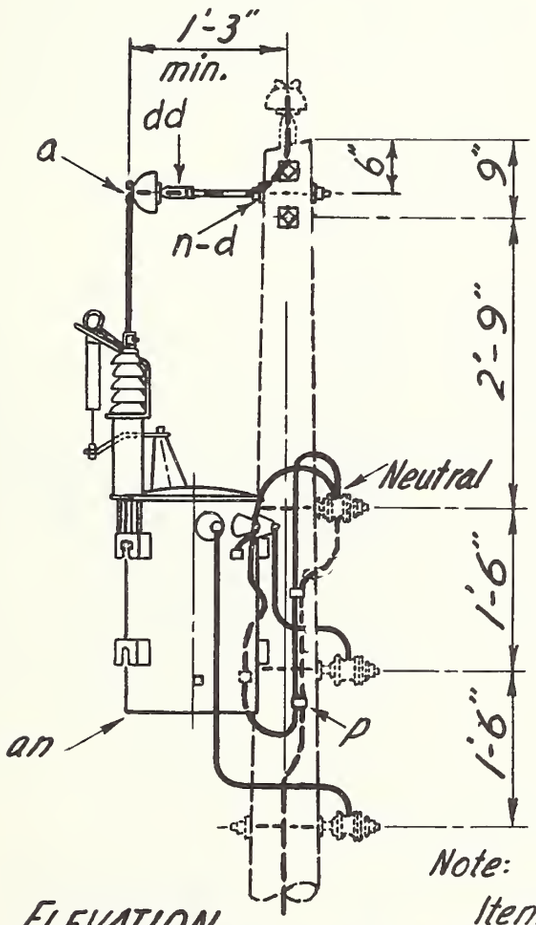


PLAN



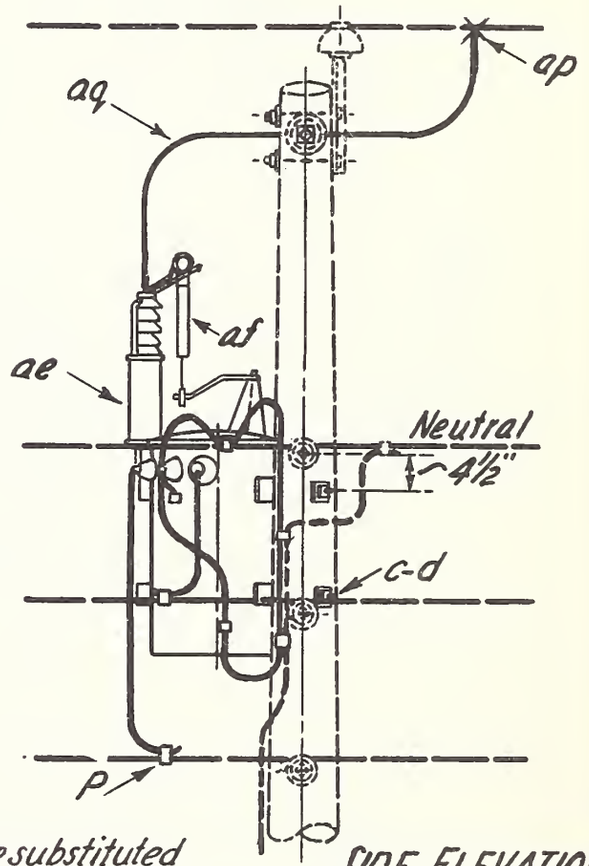
Add Ground Assembly As Required

WIRING DIAGRAM



ELEVATION

Note:
Item ax may be substituted for items ae and af.



SIDE ELEVATION

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
a	1	Insulator, pin type		af	1	Cutout, fuse, single shot	
c	2	Bolt, machine, 5/8" x req'd. length		an	1	Transformer, coordinated, conventional	
d	4	Washer, 2¼" x 2¼" x 3/16," 13/16" hole		ap	1	Clamp, hot line, tap assembly	
n	1	Bolt, double arming, 5/8" x req'd length		aq		Leads, #6 S.D. copper or equiv.	
ae	1	Lightning arrester		dd	1	Adapter, Insulator	
p		Connectors, as req'd.					

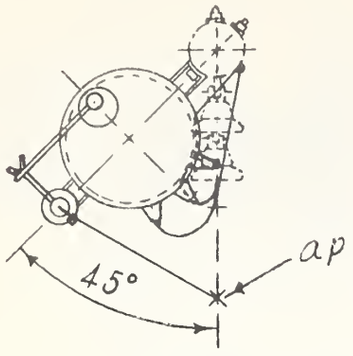
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED CONVENTIONAL TRANSFORMER WITH TANK MOUNTED CUTOUT AND LIGHTNING ARRESTER

Scale: ½" = 1'-0"

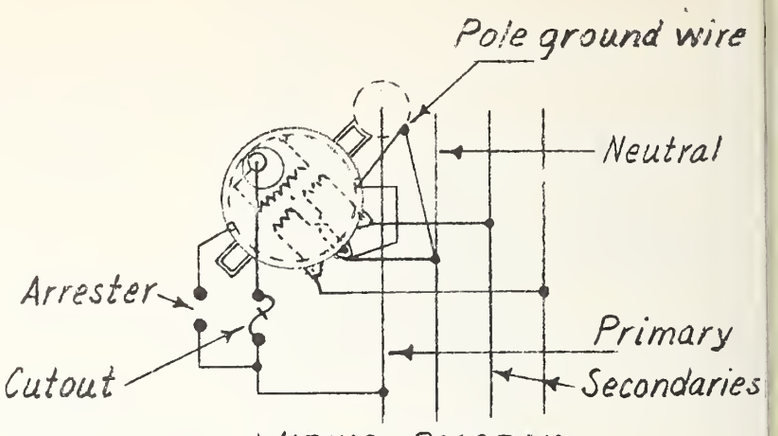
Date: July 20, 1948

G9-1½A

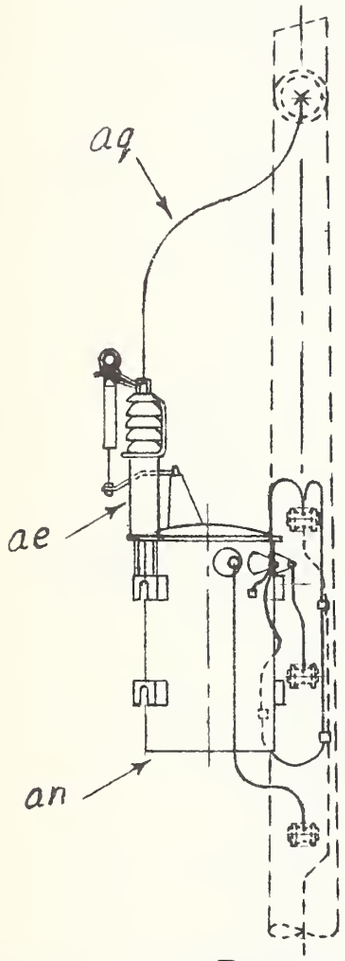
No.	REVISION	Date:
1	Revised	7-12-56



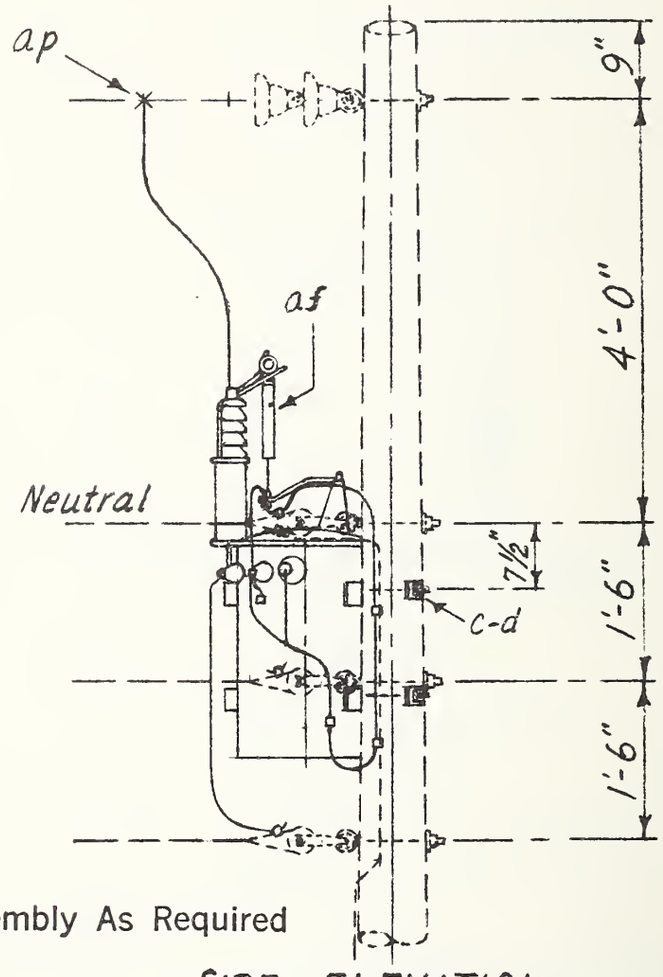
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
c	2	Bolt, machine, 5/8" x req'd. length		an	1	Transformer	
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		ap	1	Clamp, hot line, tap assembly	
p		Connectors, as required		ag		Leads and jumpers as req'd.	
ae	1	Lightning arrester					
af	1	Cutout, fuse, single shot					

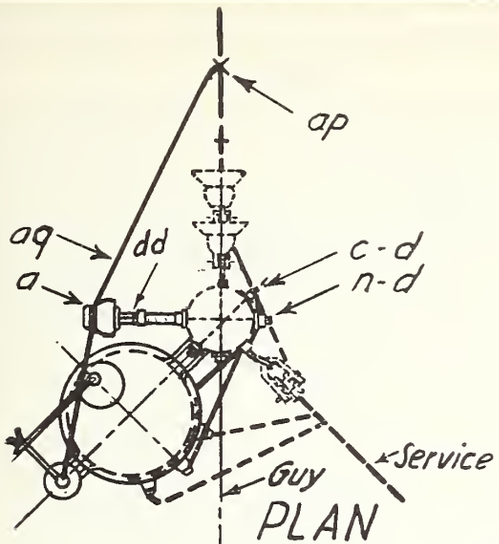
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
CONVENTIONAL TRANSFORMER WITH TANK MOUNTED
CUTOUT AND LIGHTNING ARRESTER

Scale: ½"=1'-0"

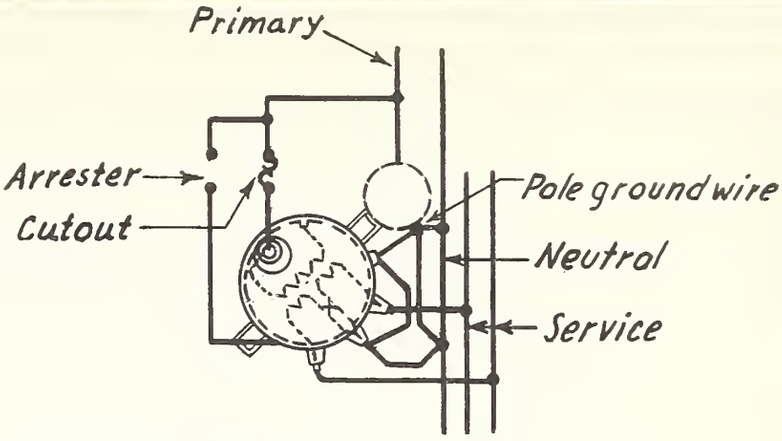
Date: July 12, 1956

G 10-1½

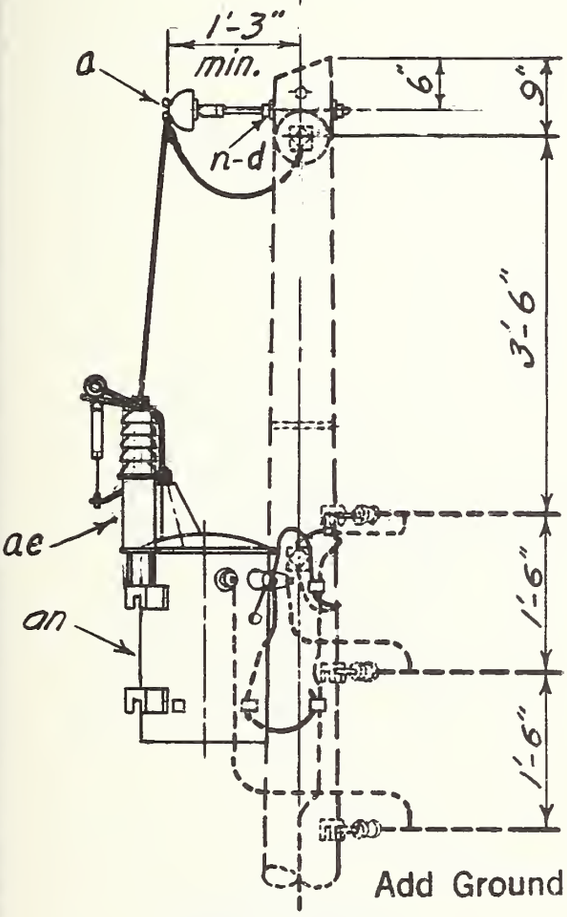
NO.	REVISION	Date:



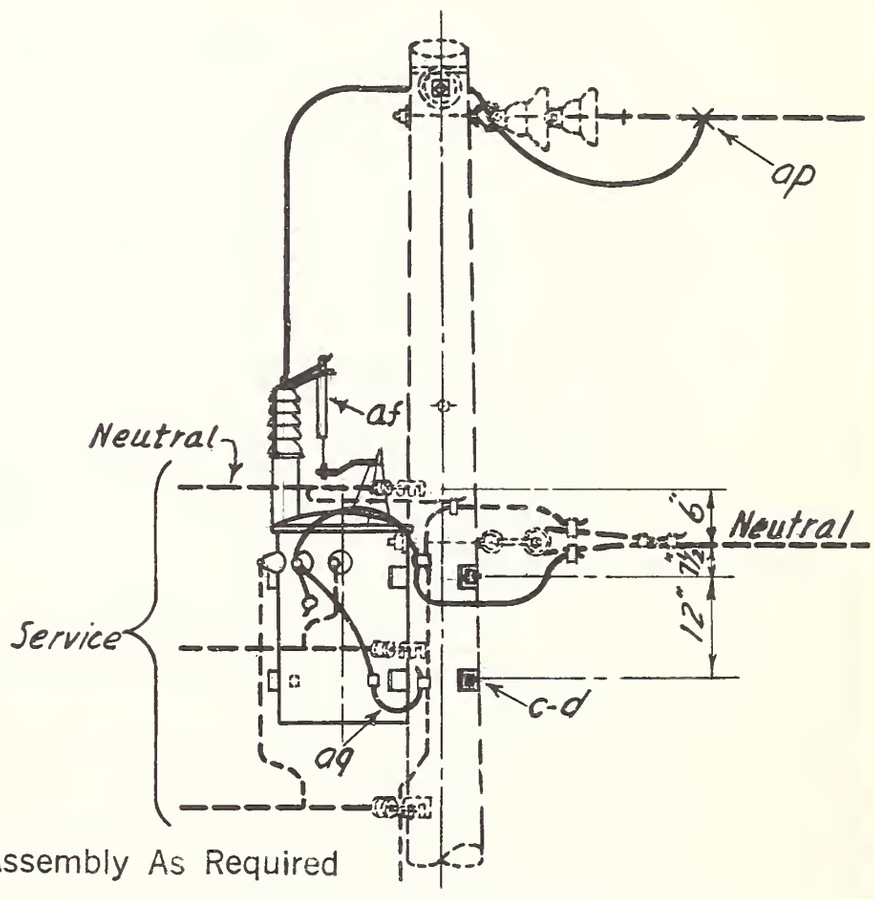
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	No. REQ'D	MATERIAL		ITEM	No REQ'D	MATERIAL	
a	1	Insulator, pin type		an	1	Transformer	
c	2	Bolt, machine, 5/8" x req'd. length		ap	1	Clamp, hot line, tap assembly	
d	4	Washer, 2¼" X2 ¼" x 3/16", 13/16" hole		aq		Leads, #6 S.D. Copper or equiv.	
n	1	Bolt, double arming, 5/8" x req'd. length		dd	1	Adapter, insulator, 5/8"	
p		Connectors, as req'd.		af	1	Cutout, fuse, single shot	
ae	1	Lightning arrester					

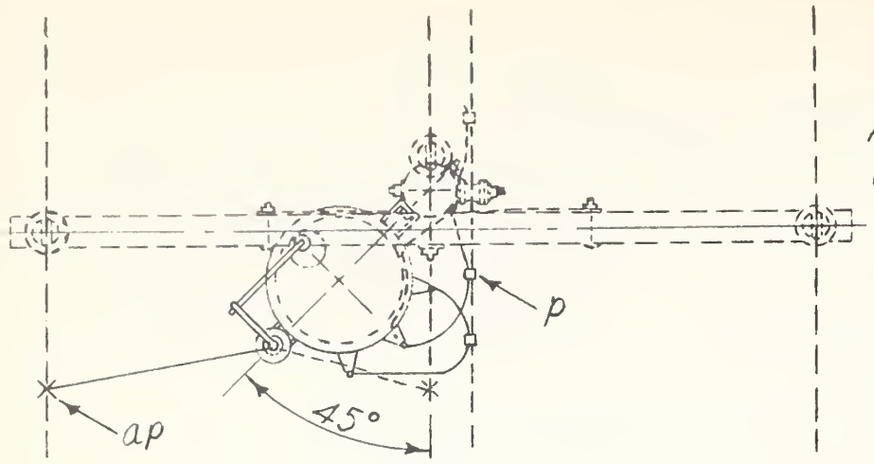
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE NEUTRAL GROUNDED CONVENTIONAL TRANSFORMER WITH TANK MOUNTED CUTOUT AND LIGHTNING ARRESTER

Scale: ½" = 1'-0"

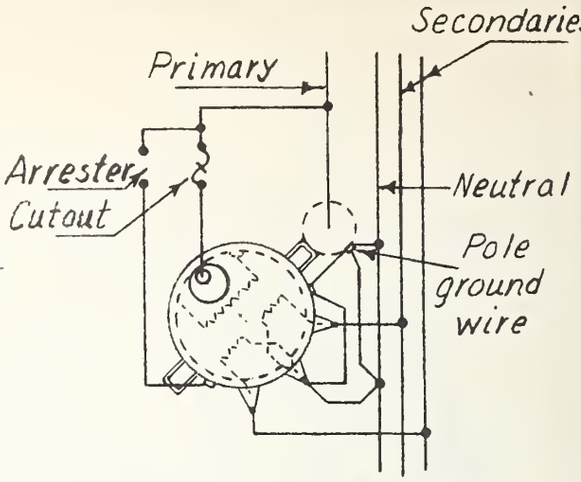
Date: July 12, 1956

G10-1½ A

No.	REVISION	DATE

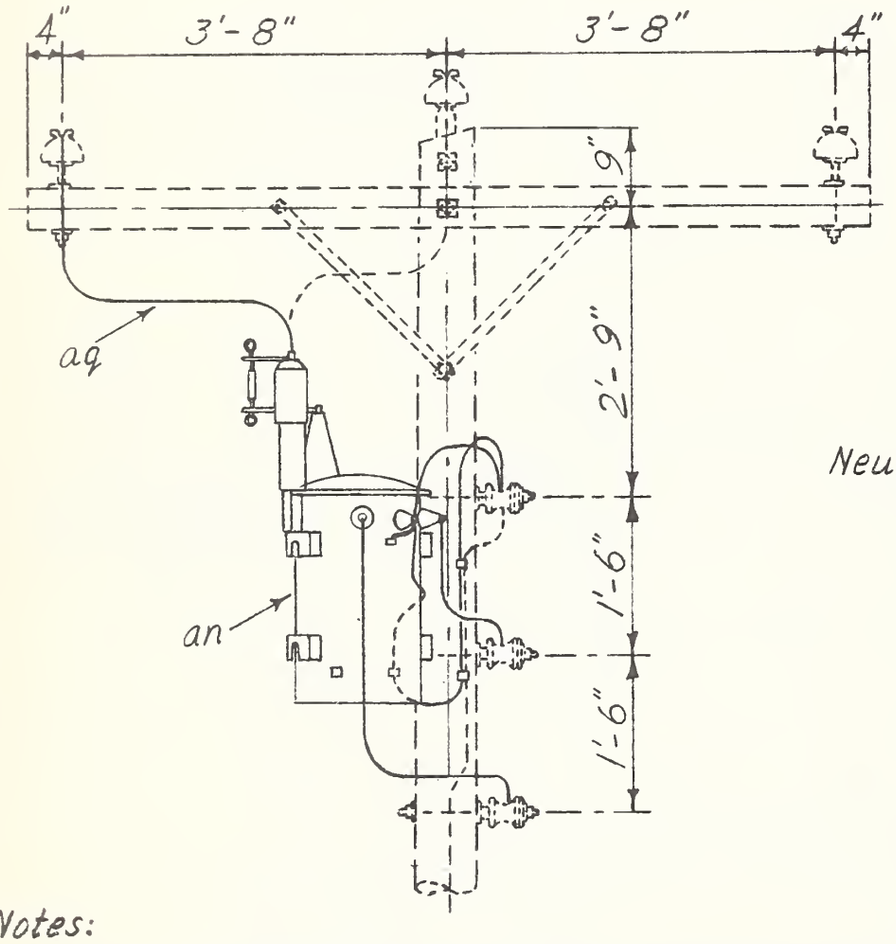


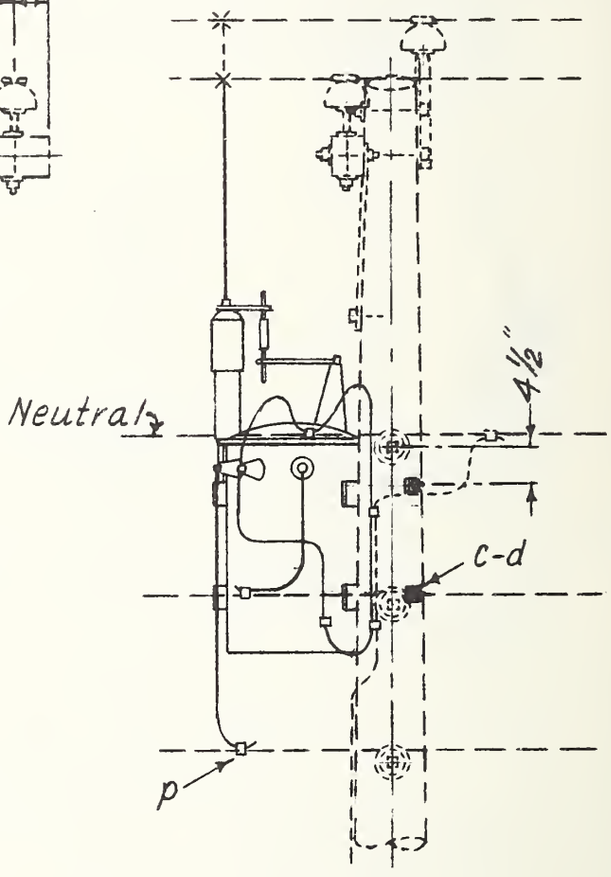
PLAN



WIRING DIAGRAM

Add Ground Assembly As Required





Notes:

1. Reverse for connection to other outside phase.
2. For completely Self Proctected Transformer designate as G39-1½A.

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
c	2	Bolt, machine, 5/8" x req'd. lgth.		ap	1	Clamp, hot line, tap assembly	
d	2	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		aq		Leads, #6 S.D. copper or equiv.	
p		Connectors, as required					
an	1	Tranformer, CSP or conventional					

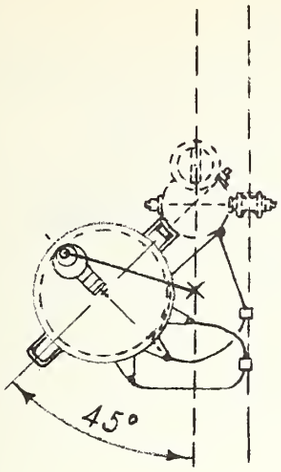
7.2/12.5 KV. PRIMARY, 3-PHASE, 4-WIRE STAR CONVENTIONAL TRANSFORMER WITH TANK-MOUNTED CUTOUT AND LIGHTNING ARRESTER

Scale: ½"=1'-0"

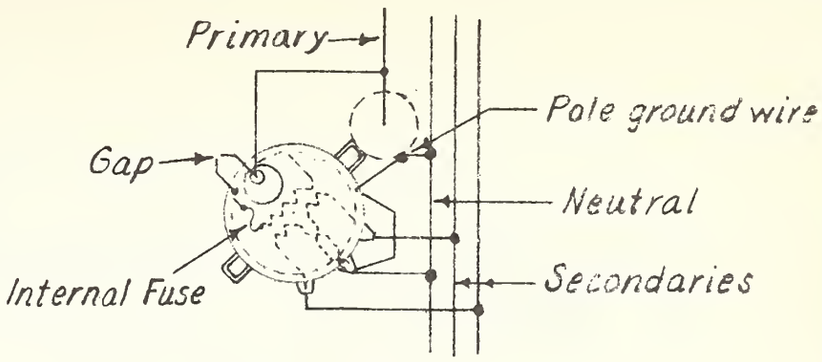
Date: July 12, 1956

G39-1½

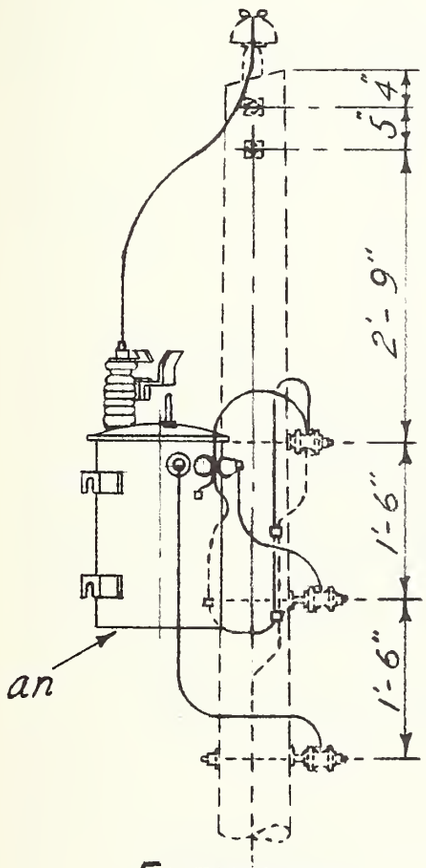
No.	REVISION	Date



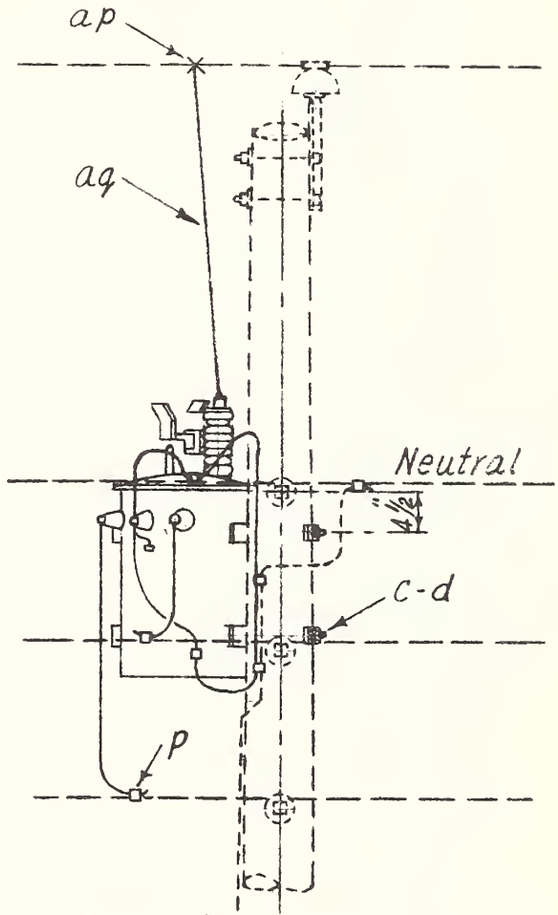
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
c	2	Bolt, machine, 5/8" x req'd. length		aq		Leads or jumpers, as req'd.	
d	2	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		an	1	Transformer, coordinated, conventional	
p		Connectors, as required					
ap	1	Clamp, hot line, tap assembly					

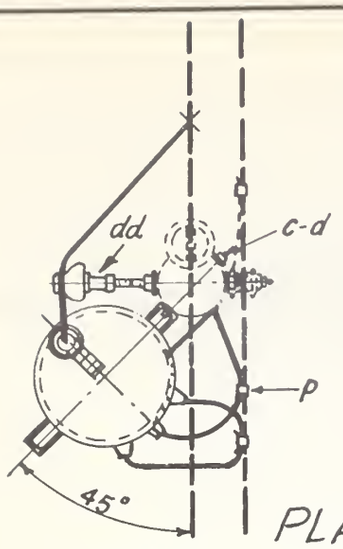
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE NEUTRAL GROUNDED CONVENTIONAL TRANSFORMER WITH INTERNAL PRIMARY FUSE AND DOUBLE GAP AT 0° TO 5° ANGLE

NO.	REVISION	Date:
1	Revised	7-12-56

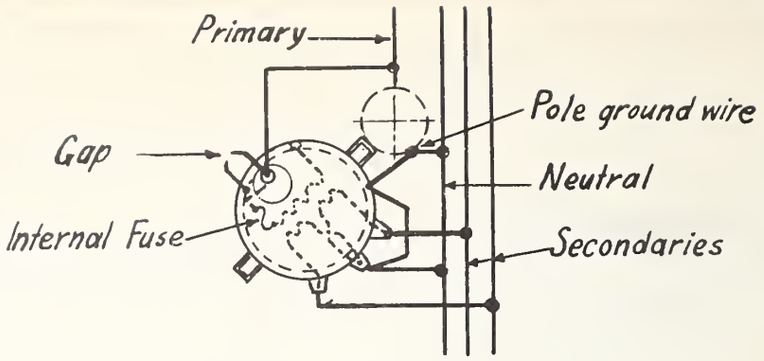
Scale: ½" = 1'-0"

Date: July 20, 1948

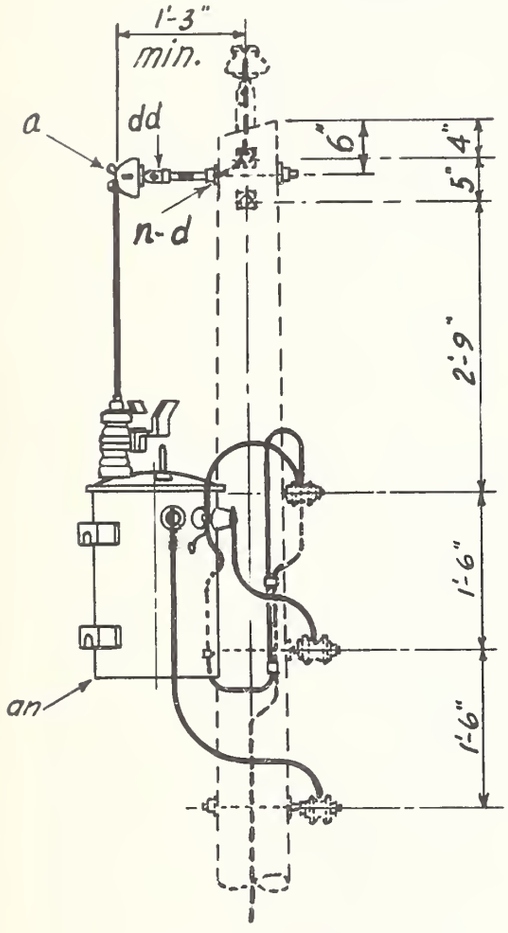
G 65-1½



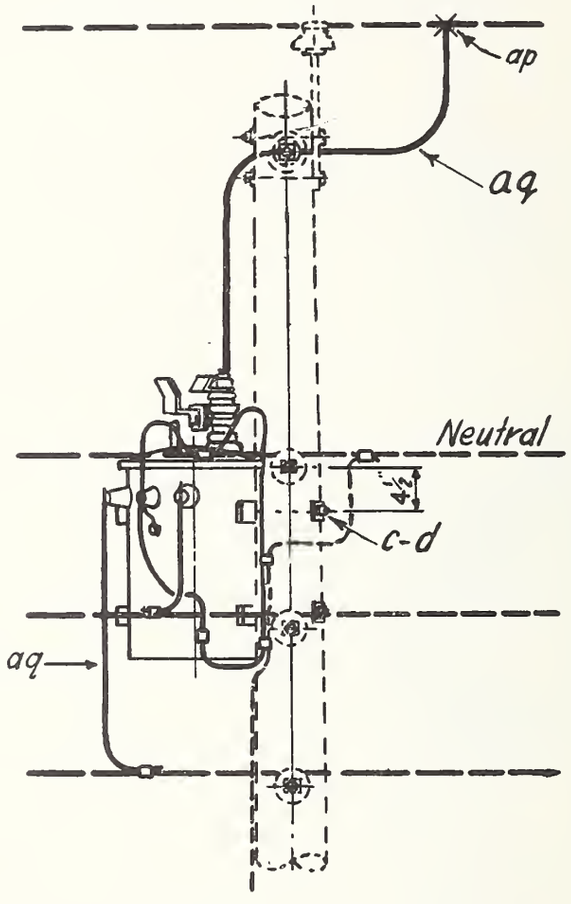
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	Nº REQ'D.	MATERIAL		ITEM	Nº REQ'D.	MATERIAL	
a	1	Insulator, pin type		ap	1	Clamp, hot line, tap assembly	
c	2	Bolt, machine, 5/8" x req'd. length		aq		Leads, #6 S.D. Copper or equiv.	
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		dd	1	Adapter, insulator, 5/3"	
n	1	Bolt, double arming, 5/8" x req'd. length		an	1	Transformer, coordinated, conventional	
p		Connectors, as req'd.					

No.	REVISIONS	DATE

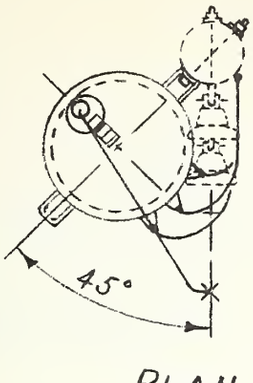
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED

CONVENTIONAL TRANSFORMER WITH INTERNAL PRIMARY FUSE AND DOUBLE GAP AT 0° TO 5° ANGLE

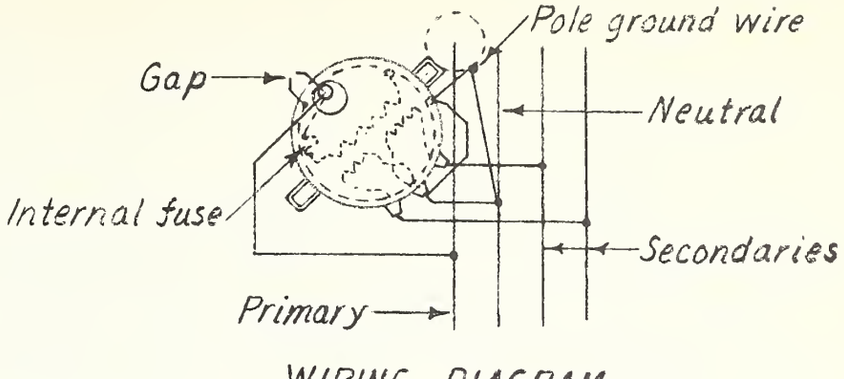
Scale: 1/2" = 1'-0"

Date: July 12, 1956

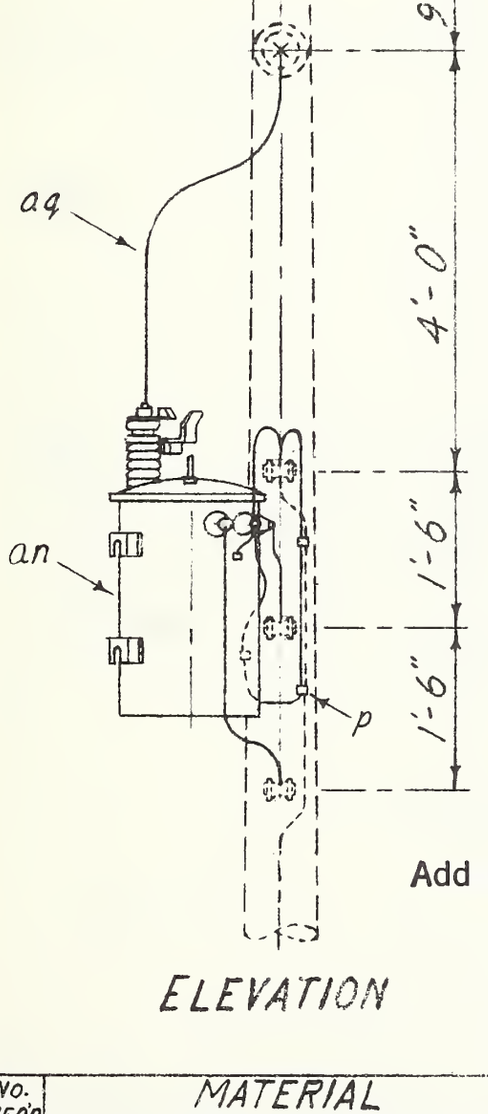
G 65-1½ A



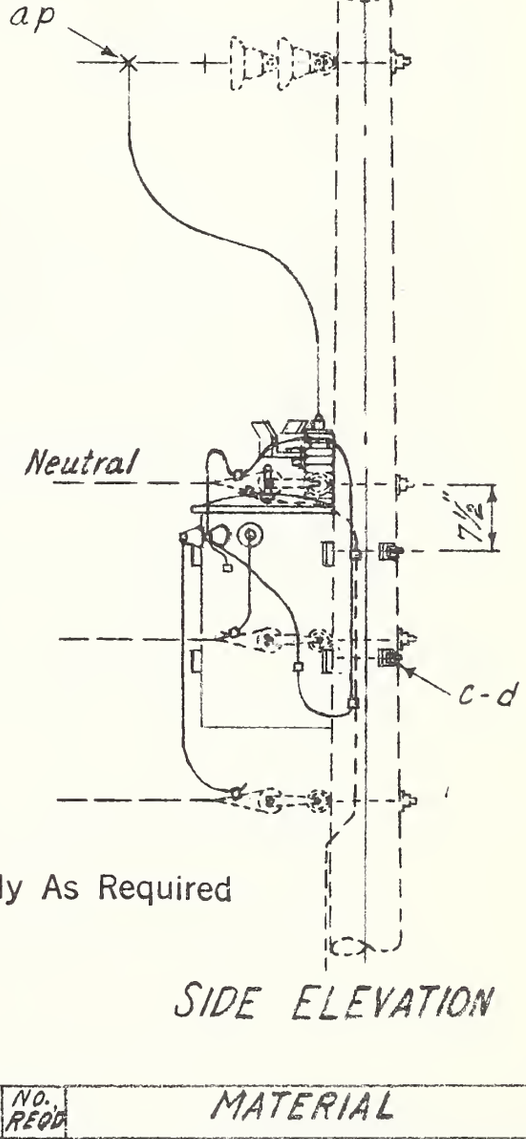
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
c	2	Bolt, machine, 5/8" x req'd. length		ap	1	Clamp, hot line, tap assembly	
d	2	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		aq		Jumpers and leads as req'd.	
p		Connectors, as req'd.					
an	1	Tranformer, coord., conventional					

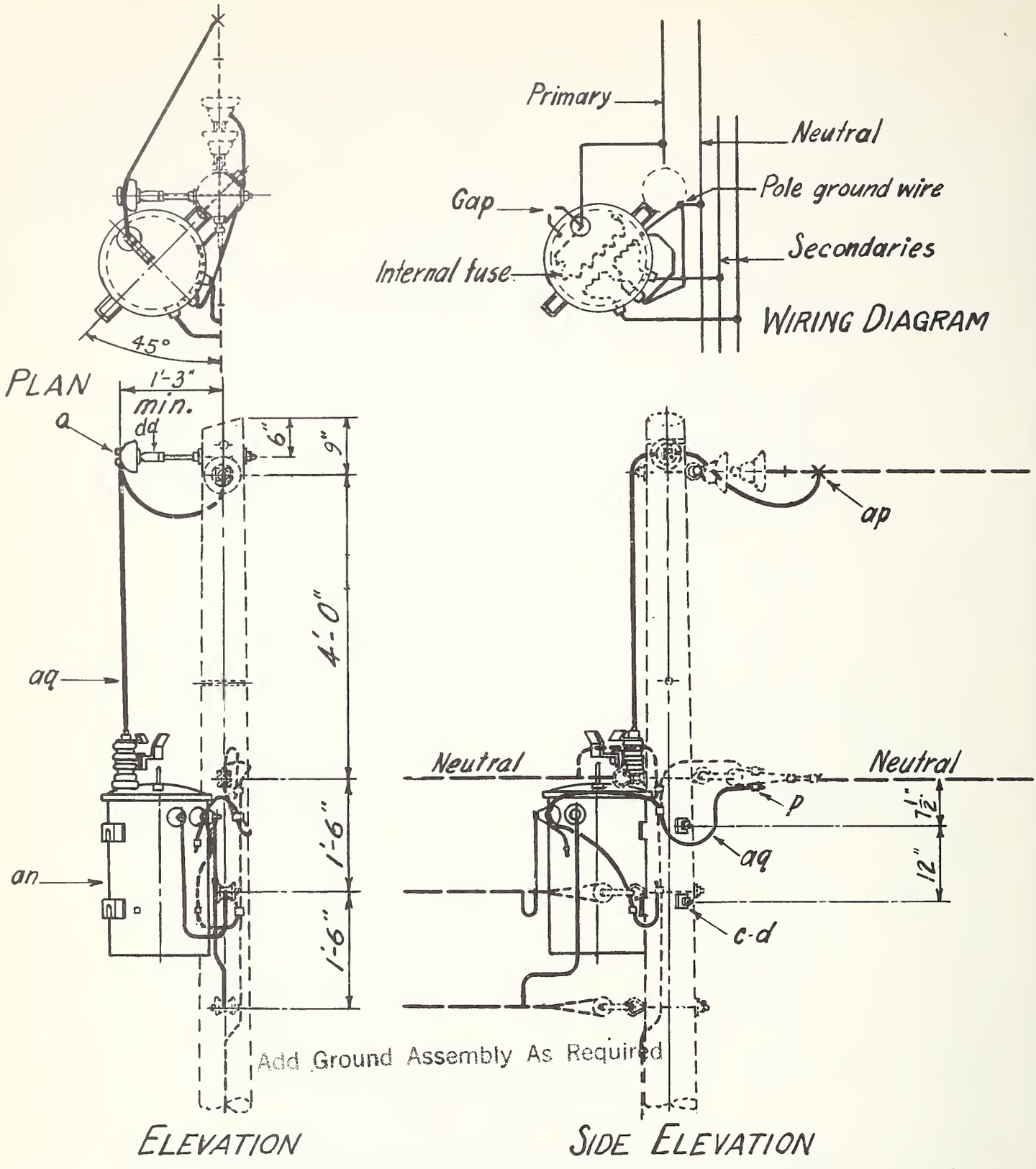
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
CONVENTIONAL TRANSFORMER WITH INTERNAL PRIMARY FUSE
AND DOUBLE GAP AT DEAD END

Scale: ½"=1-0"

Date: July 12, 1956

G 66-1½

NO.	REVISION	DATE



ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
a	1	Insulator, pin type		an	1	Transformer, coord., conventional	
c	2	Bolt, machine, 5/8" x req'd. length		ap	1	Clamp, hot line, tap assembly	
d	4	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		aq		Leads, #6 S.D. Copper or equiv.	
n	1	Bolt, double arming, 5/8" x req'd. lth		dd	1	Adapter, Insulator, 5/8"	
p		Connectors, as req'd.					

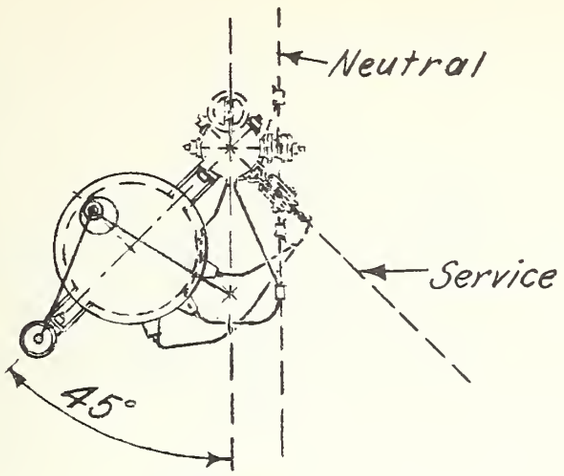
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
CONVENTIONAL TRANSFORMER WITH INTERNAL PRIMARY FUSE
AND DOUBLE GAP AT DEAD END

No.	REVISIONS	DATE
1	Revised	7-56

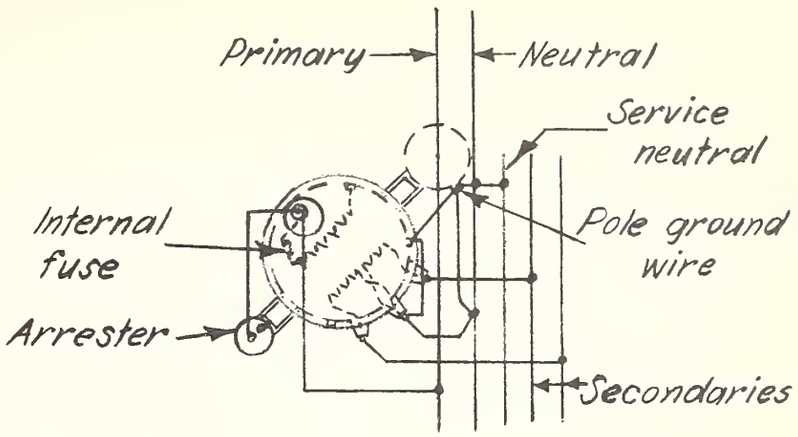
Scale: ½" = 1'-0"

Date: July 6, 1948

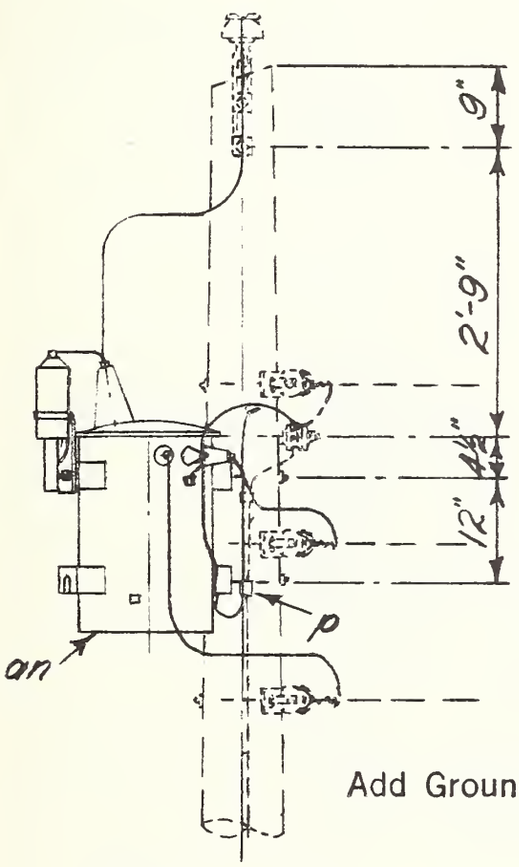
G66-1½ A



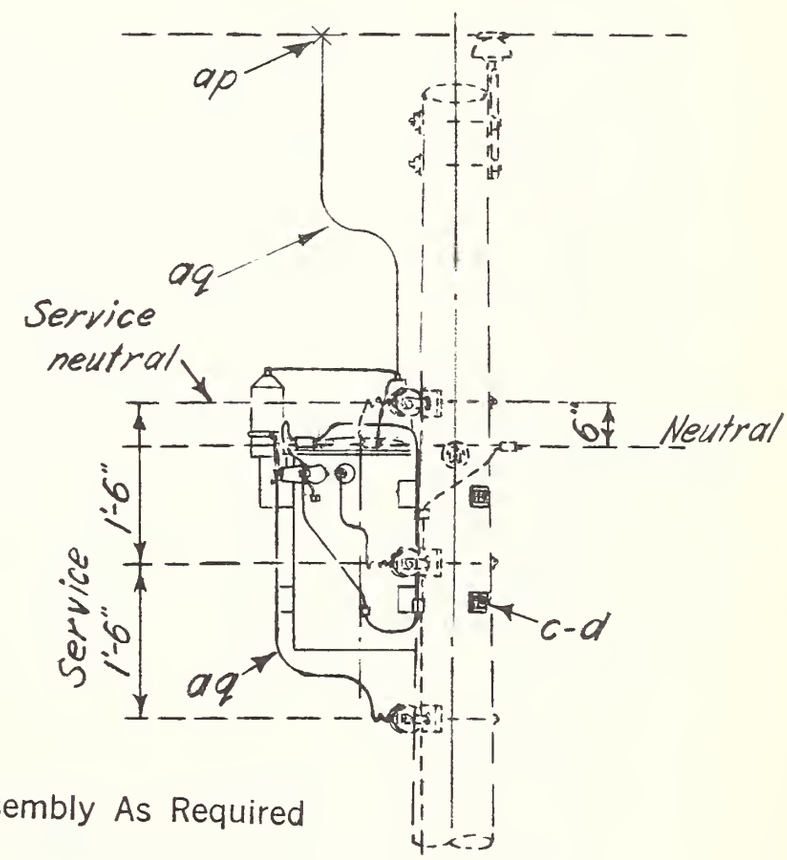
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	No. Req'd.	MATERIAL		ITEM	No. Req'd	MATERIAL	
c	2	Bolt, machine, 5/8" x req'd. length		an	1	Transformer; self-protected type	
d	2	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		ap	1	Clamp, hot line, tap assembly	
p		Connectors, as req'd.		aq		Leads; #6 S.D. copper or equiv.	

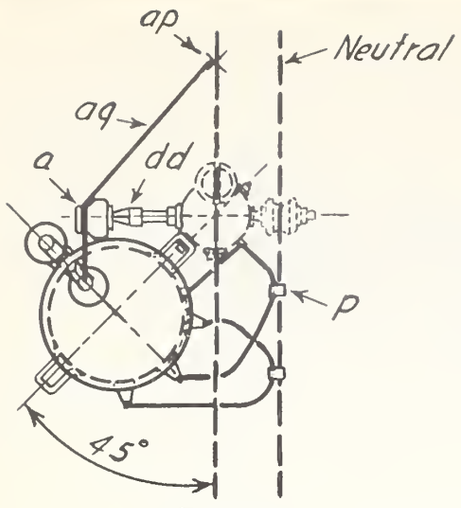
7.2/12.5 KV. PRIMARY, 1-PHASE, 2-WIRE NEUTRAL GROUNDED
SELF PROTECTED TRANSFORMER AT 0° TO 5° ANGLE

Scale: ½"=1'-0"

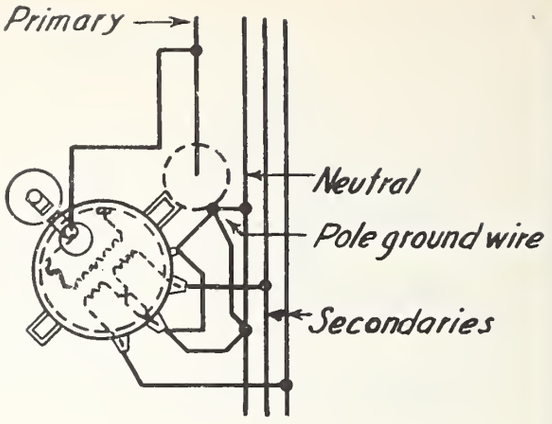
Date: July 12, 1956

G105-1½

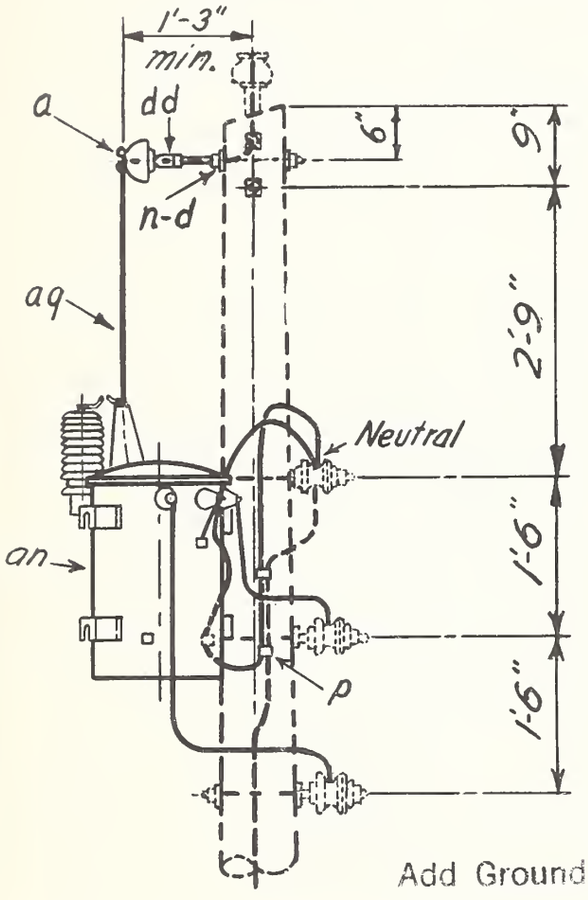
No.	REVISION	DATE



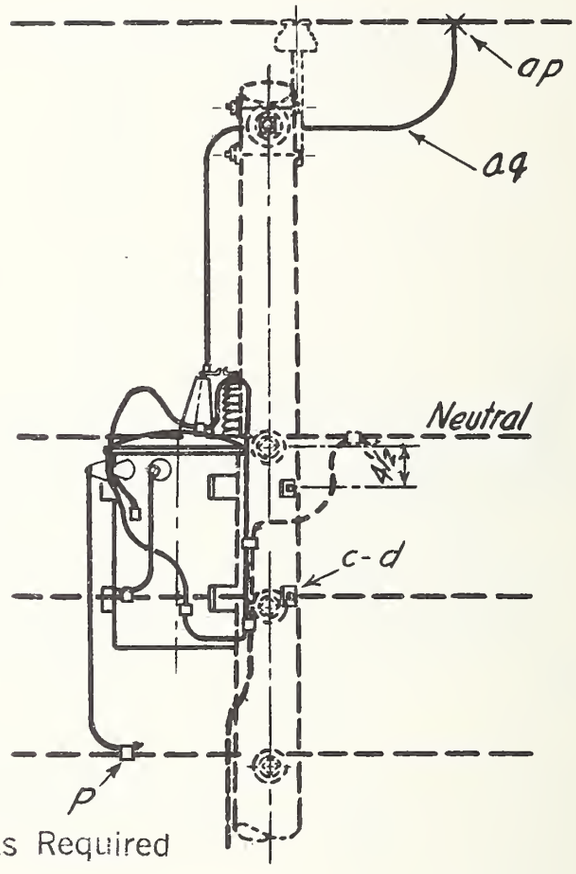
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	NO. REQD.	MATERIAL		ITEM	NO. REQD.	MATERIAL	
a	1	Insulator, pin type		an	1	Transformer, self protected type	
c	2	Bolt, machine, 5/8" x req'd. length		ap	1	Clamp, hot line, tap assembly	
d	4	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		aq		Leads, #6 SD copper or equiv.	
n	1	Bolt, double arming, 5/8" x req'd. length		dd	1	Adapter, insulator, 5/8"	
p		Connectors, as req'd.					

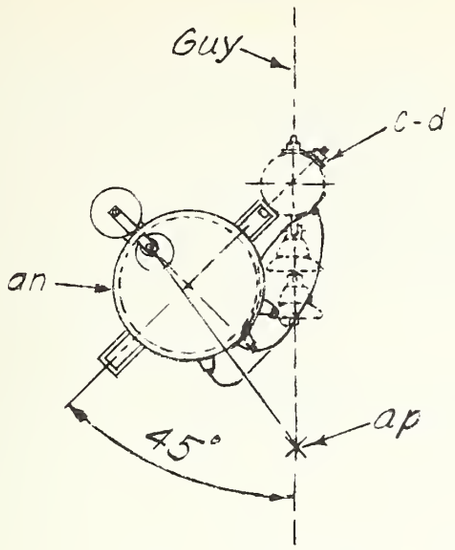
NO.	REVISION	DATE:
1	Revised	7-12-56

7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
SELF PROTECTED TRANSFORMER AT 0° TO 5° ANGLE

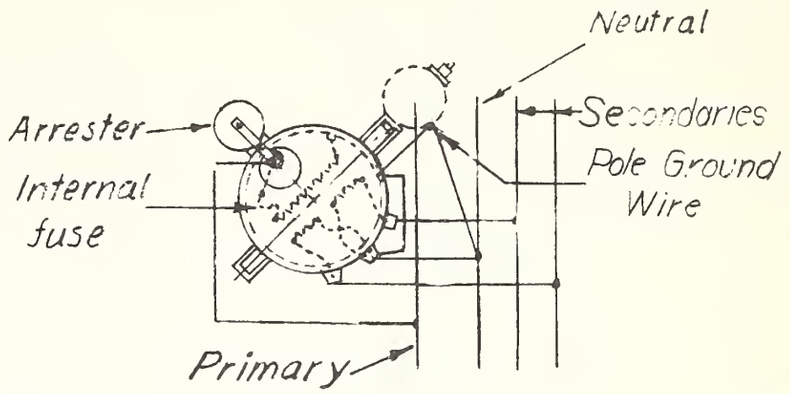
Scale: ½" = 1'-0"

Date: Mar. 16, 1948

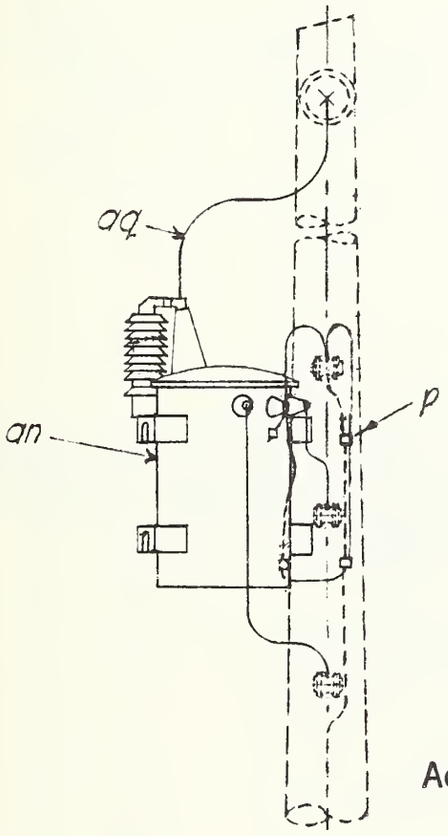
G105-1½A



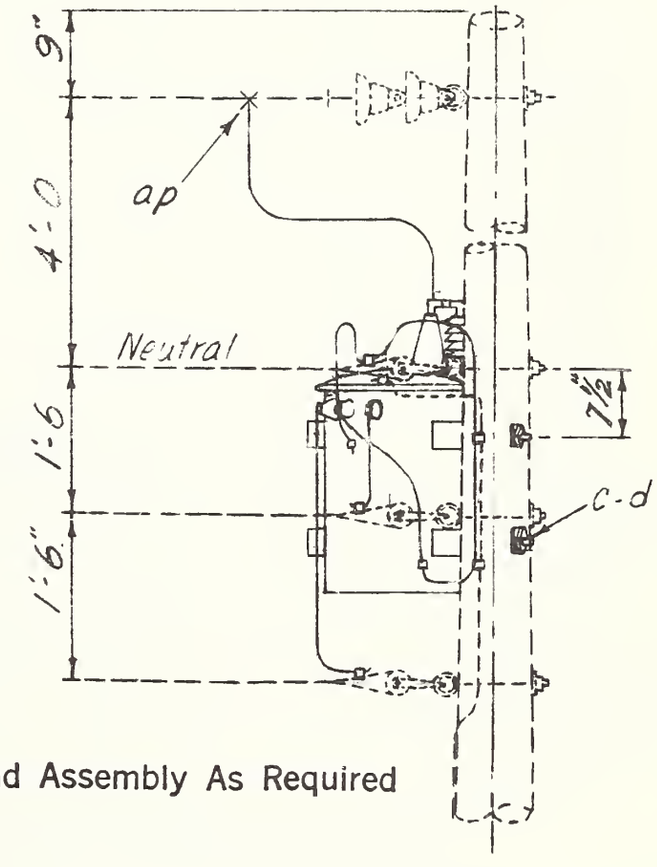
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
c	2	Bolt, machine, 5/8" x req'd length		ap	1	Clamp, hot line tap assembly	
d	2	Washer, 2¼ x 2¼ x 3/16", 15/16" hole		aq		Jumpers and leads as req'd.	
p		Connectors, as req'd					
an	1	Transformer					

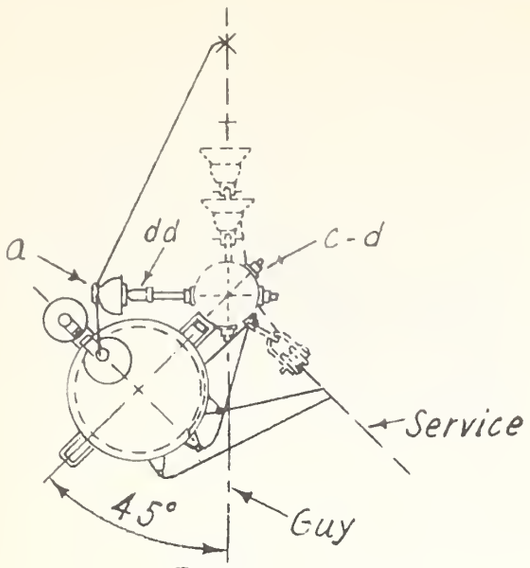
7.2/12.5Kv. PRIMARY, 1 PHASE 2 WIRE, NEUTRAL GROUNDED
SELF-PROTECTED TRANSFORMER AT DEADEND

Scale: ½"=1'-0"

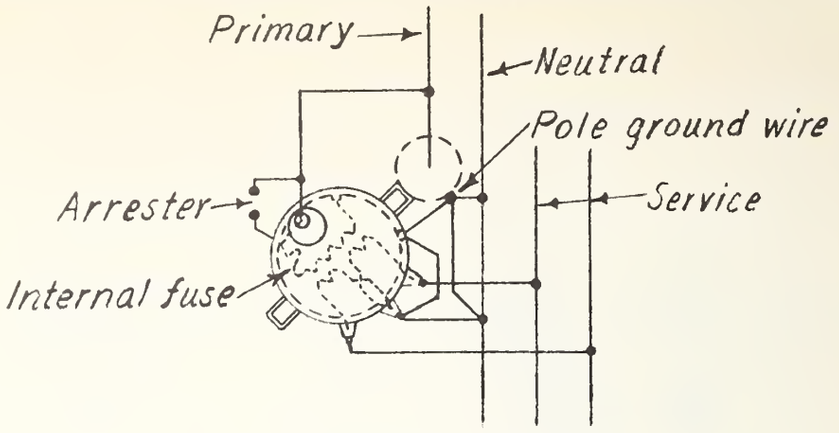
Date: July 12, 1956

G106-1½

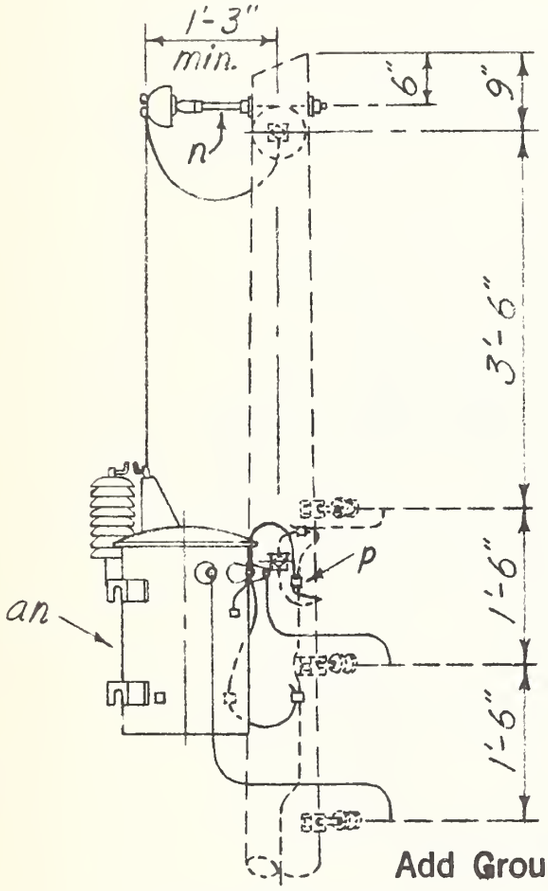
No.	REVISION	DATE



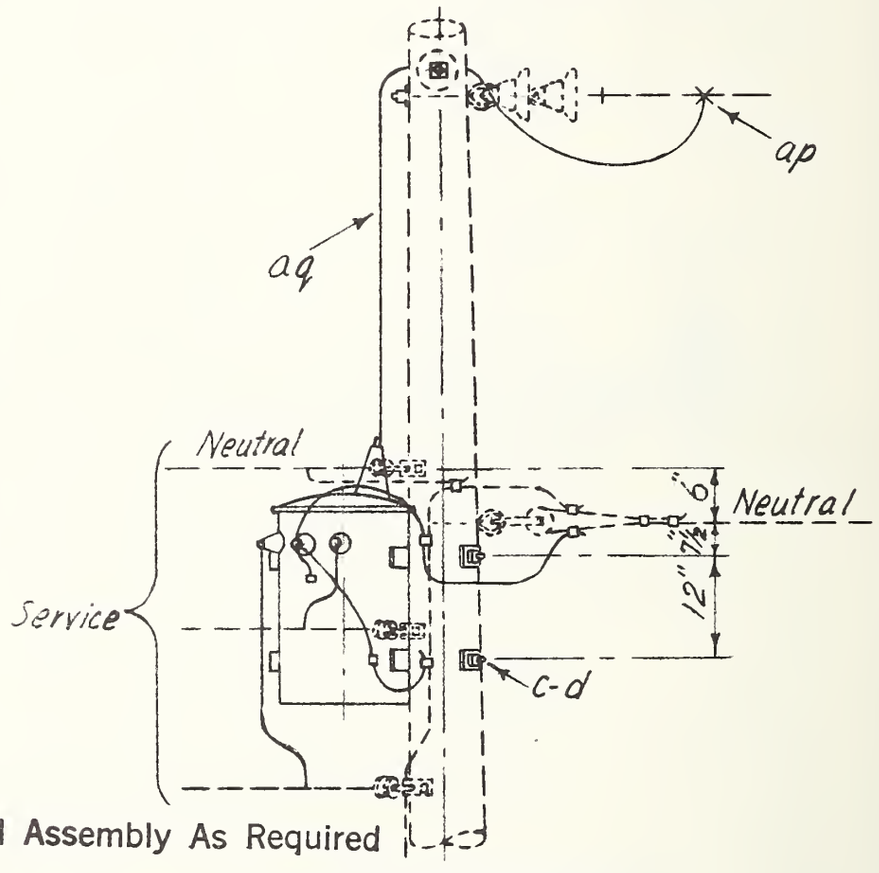
PLAN



WIRING DIAGRAM



ELEVATION



Add Ground Assembly As Required

SIDE ELEVATION

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
a	1	Insulator, pin type		p		Connectors, as required	
c	2	Bolt, machine, 5/8" x req'd. length		ap	1	Clamp, hot line, tap assembly	
d	4	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		aq		Leads and jumpers as req'd.	
n	1	Bolt, double arming, 5/8" x req'd. lg'th.		dd	1	Adapter, insulator	
an	1	Transformer, self protected type					

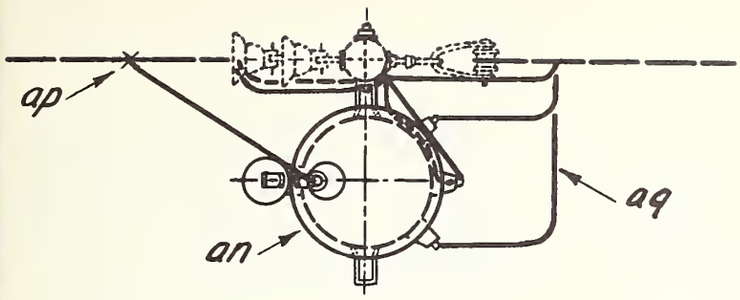
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
SELF PROTECTED TRANSFORMER AT DEADEND

Scale: ½"=1'-0"

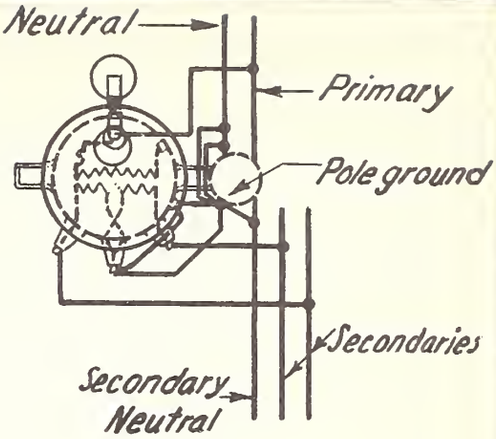
Date: July 12, 1956

G106-1½A

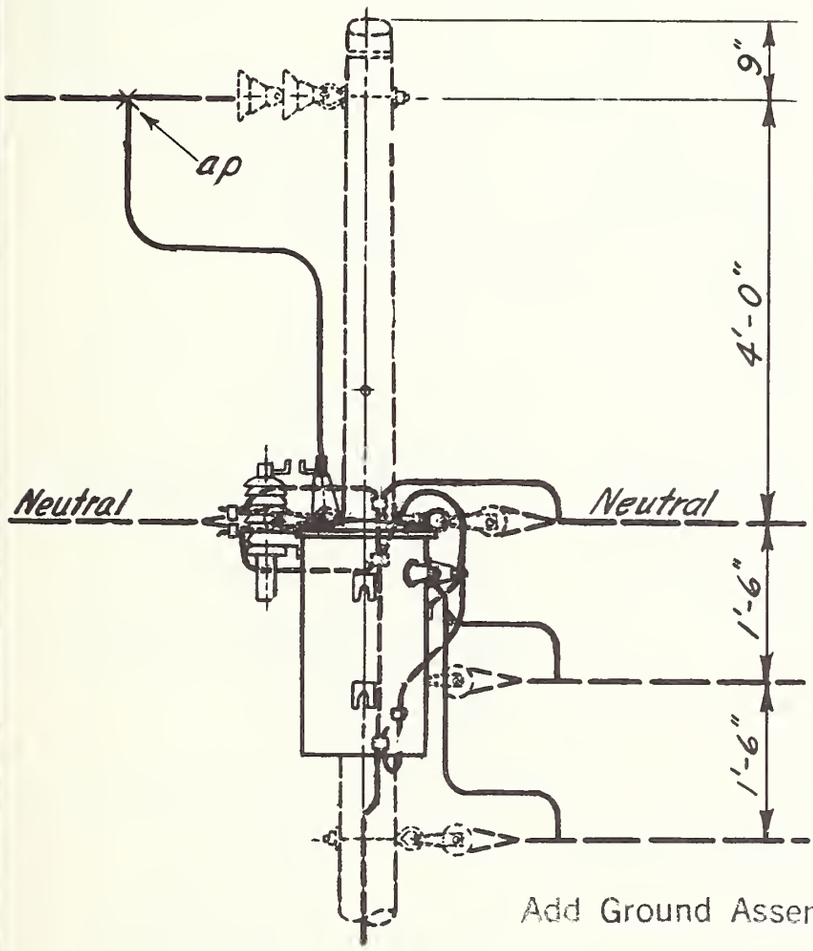
NO.	REVISION	Date:



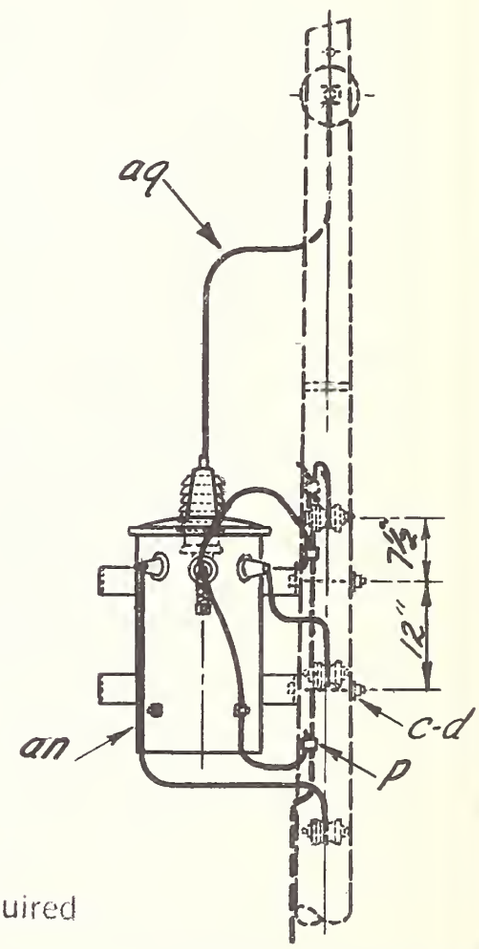
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
c	2	Bolt, machine, 5/8" x req'd. length		ap	1	Clamp, hot line, tap assembly	
d	2	Washer, 2¼" x 2¼" x 3/16"; 13/16" hole		aq		Leads, #6 S.D. Copper or equiv.	
p		Connectors, as req'd.					
an	1	Transformer, self-protected type					

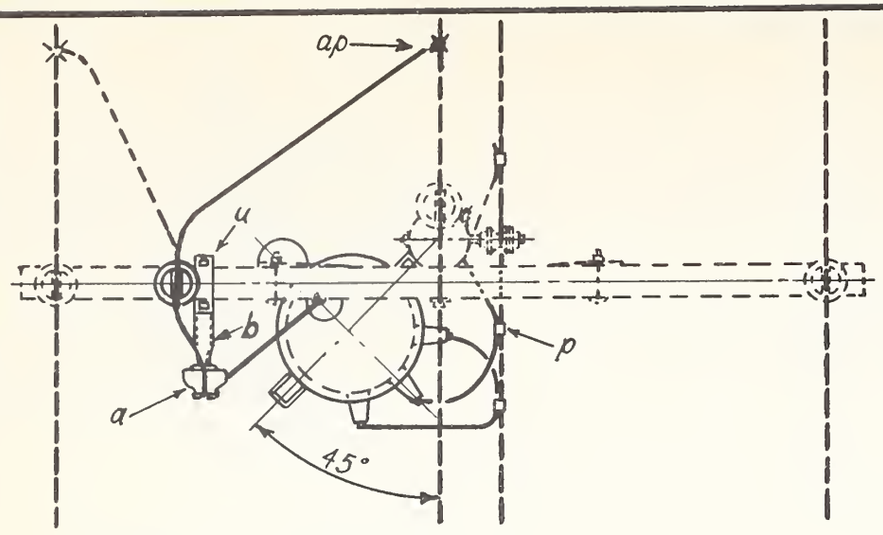
7.2/12.5 K.V. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
SELF PROTECTED TRANSFORMER AT DEADEND
SECONDARY CONTINUING

NO.	REVISION	DATE
1	Revised	7-12-56

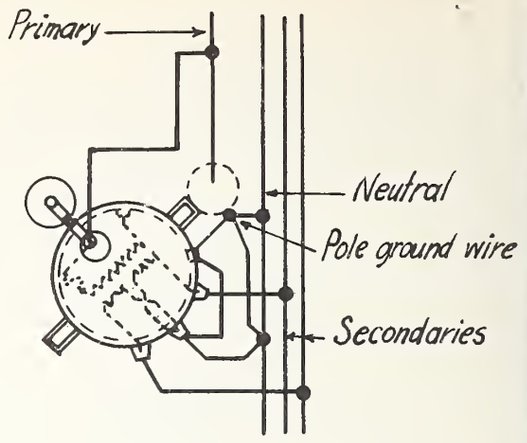
Scale: ½" = 1'-0

Date: Aug. 17, 1948

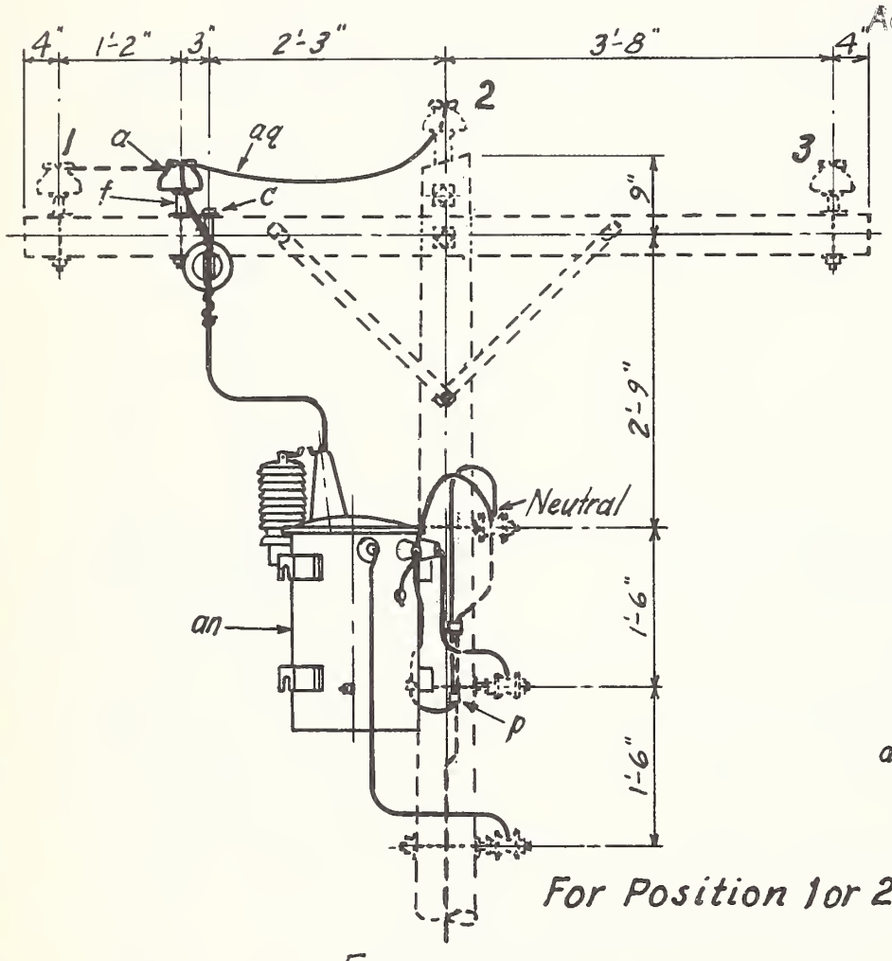
G126-1½



PLAN

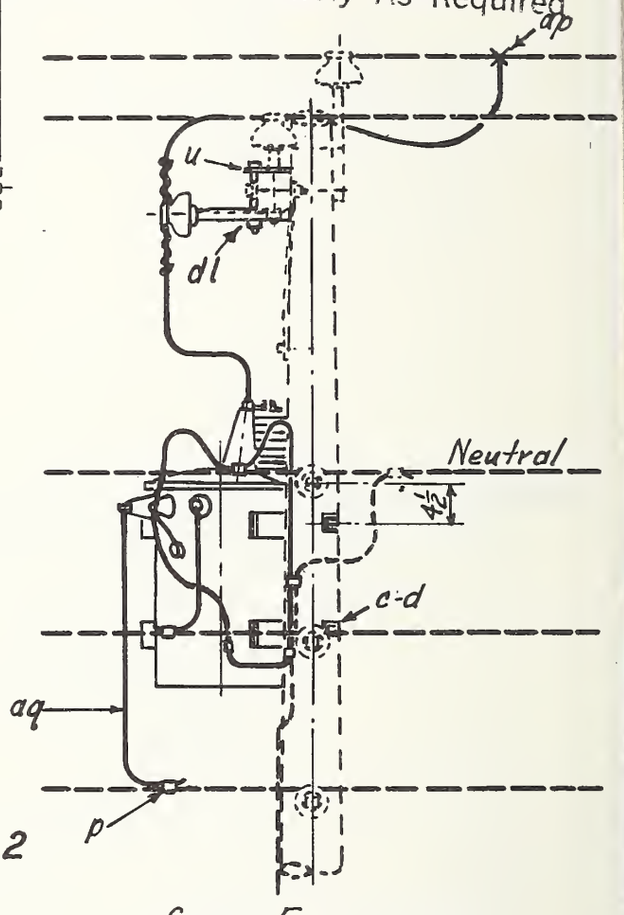


WIRING DIAGRAM



ELEVATION

Add Ground Assembly As Required



SIDE ELEVATION

For Position 1 or 2

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
a	2	Insulator, pin type		p		Connectors, as req'd.	
b	1	Pin, pole top, 15"		u	½	Clamp, guy, 3-bolt, 6" lg.	
c	4	Bolt, machine, 5/8" x req'd. length		an	1	Transformer, self-protected type	
d	2	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		ap	1	Clamp, hot line, tap. assembly	
f	1	Pin, crossarm, steel, 5/8" x 10¾"		aq		Leads, #6 S.D. copper or equiv.	
dl	2	Pipe spacer, pole pin					

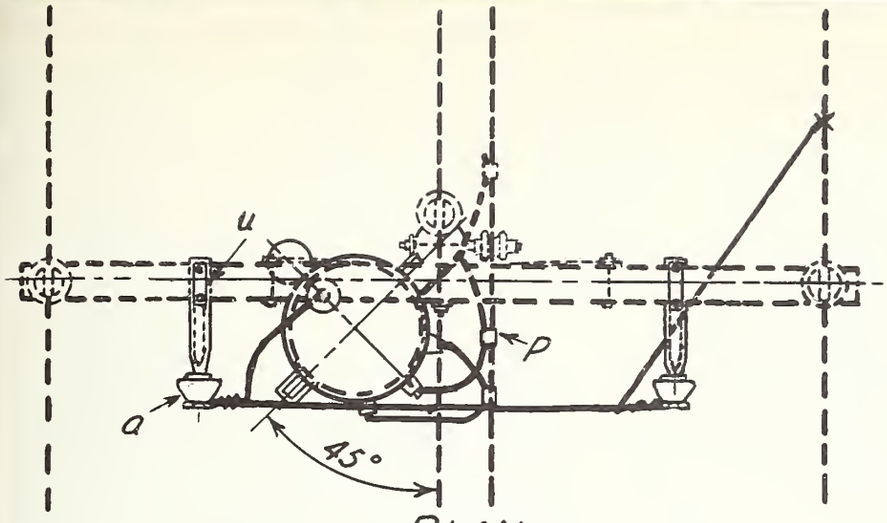
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
SELF-PROTECTED TRANSFORMER AT 0° TO 5° ANGLE

Scale: ½" = 1'-0"

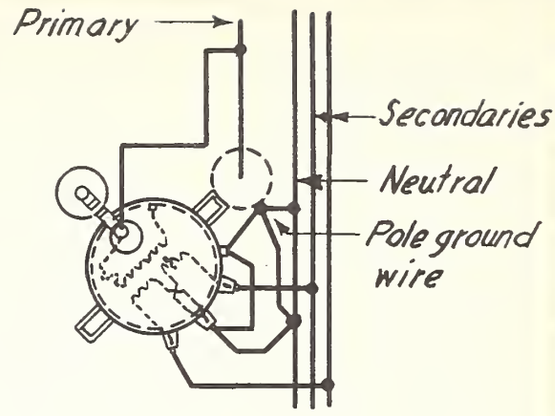
Date: Jan. 15, 1948

G135-1½

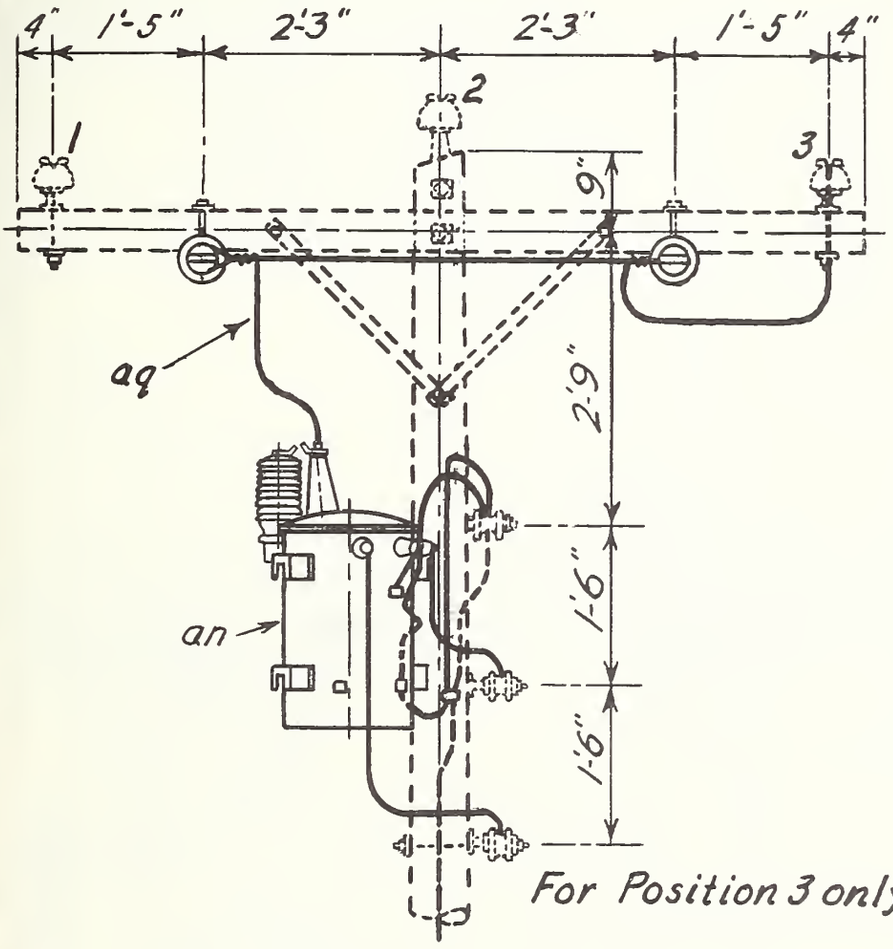
NO.	REVISION	DATE
1	Revised	11-17-53



PLAN

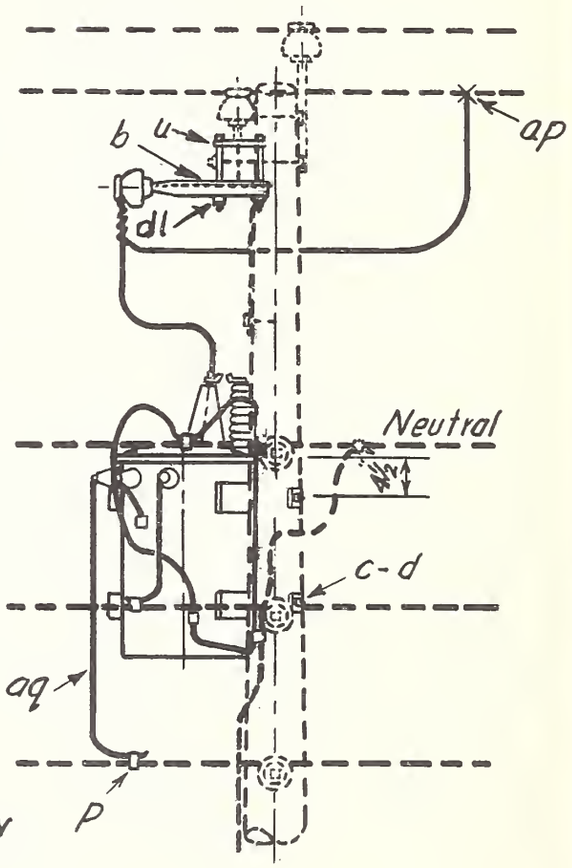


WIRING DIAGRAM



For Position 3 only

ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
a	1	Insulator, pin type		p		Connectors, as req'd.	
b	1	Pin, pole top, 15"		u	½	Clamp, guy, 3-bolt, 6" lg.	
c	4	Bolt, machine, ⅝"x req'd. lgth.		an	1	Transformer, self-protected type	
d	2	Washer, 2¼"x2¼"x 3/16"- 13/16" hole		ap	1	Clamp, hot line, tap assembly	
dl	2	Pipe spacer, pole pin		aq		Leads, #6 S.D. copper or equiv.	

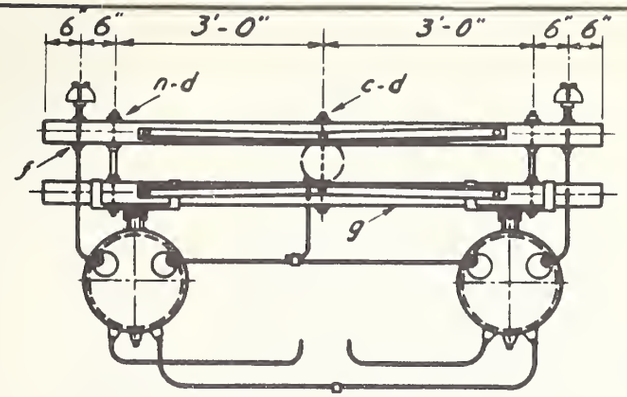
7.2/12.5 KV PRIMARY, 3-PHASE 4-WIRE STAR SELF-PROTECTED TRANSFORMER AT 0° TO 5° ANGLE

Scale ½"=1'-0"

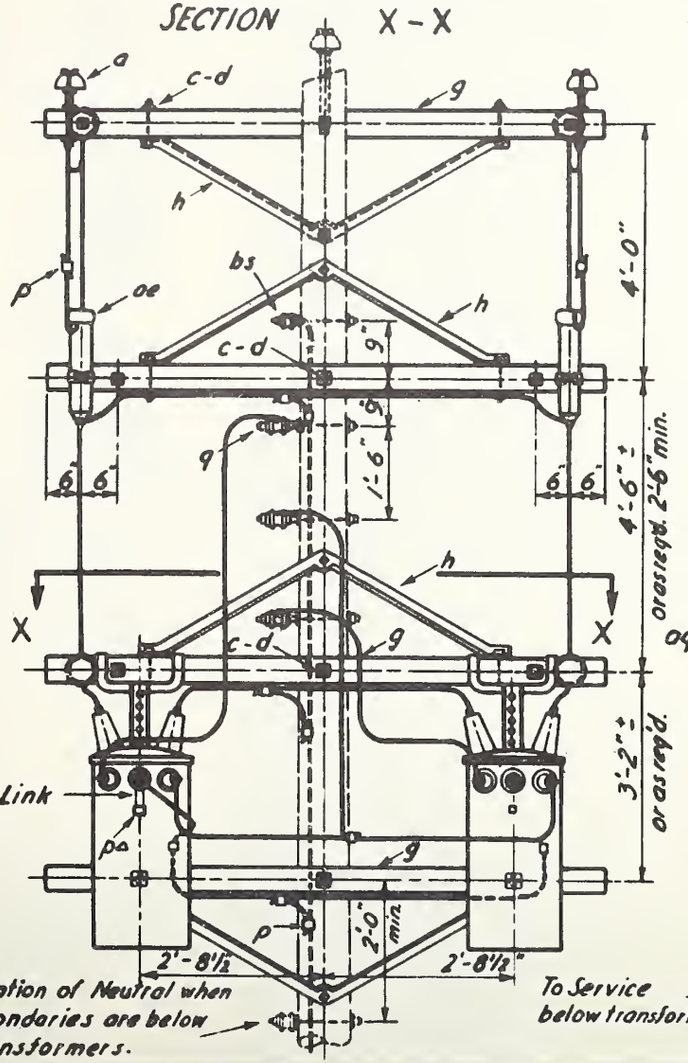
Date: Mar. 23, 1948

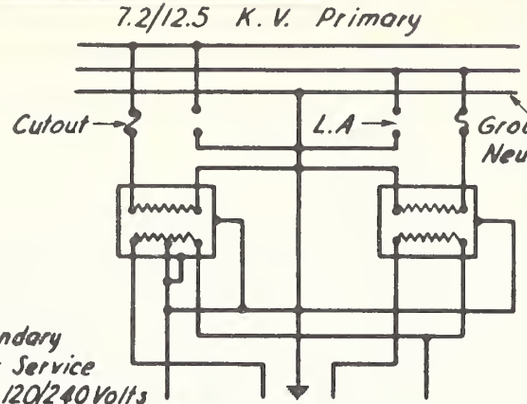
G 136-1½

NO.	REVISION	DATE
1	Revised	11-17-55

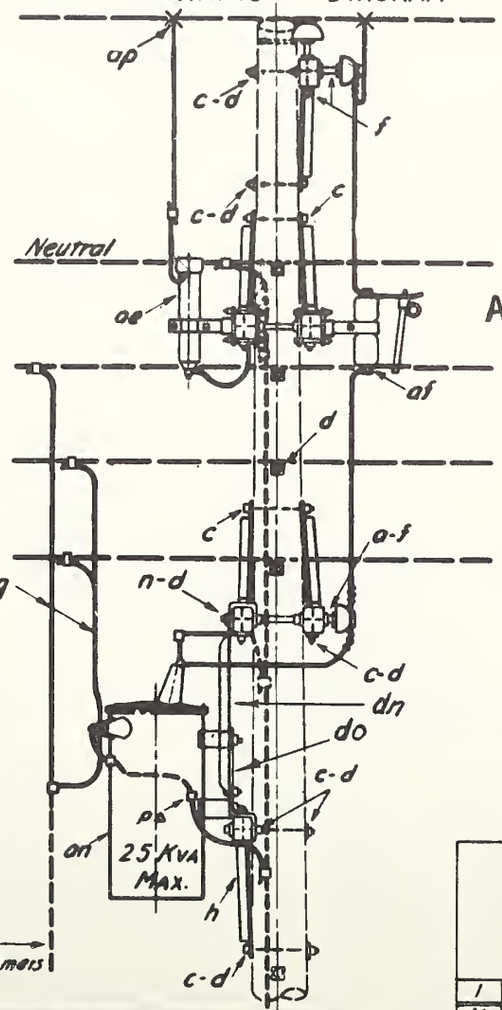


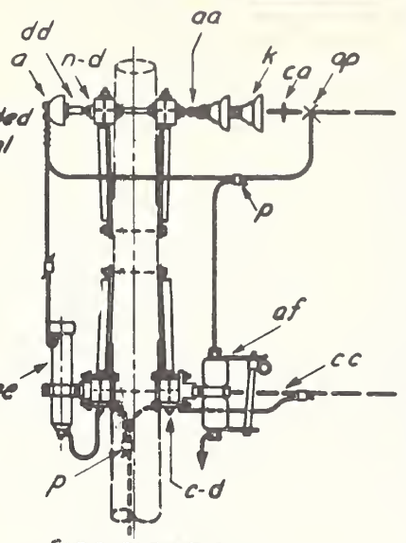
SECTION X-X





WIRING DIAGRAM



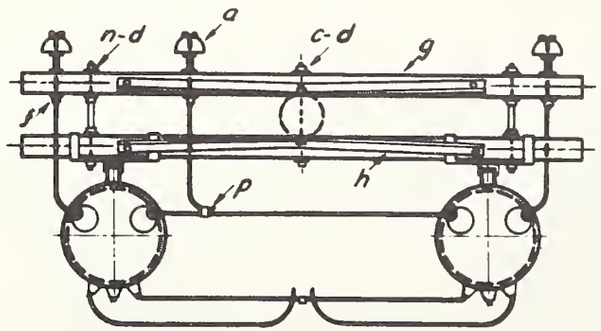


SIDE ELEVATION
(DEADEND ARRANGEMENT)

ITEM	No. REQ'D	MATERIAL	
a	6	Insulators, pin type	
c	10	Bolts, machine, ⅝" x req'd. length	
c	12	Bolts, machine, ½" x req'd. length	
d	32	Washer, 2¼"x2¼"x 13/16" dia 13/16" hole	
d	12	Washer, round, 1¾" dia. ¾" hole	
f	6	Pin, crossarm, steel, ⅝"x10¾"	
g	6	Crossarm, 3½" x 4½" x 8'-0" long	
h	6	Brace, angle, 1½"x1½"x ⅛", 60" span	
n	4	Bolt, double arming, ⅝" x req'd lg.	
p		Connectors, as req'd.	
q	3	Bolt, double upset, insulated	
ae	2	Lightning Arrester	
af	2	Cutout, fuse, single shot	
an	2	Transformer	
ap	4	Clamp, hot line, tap assembly	
oq		Leads, #6 S.D. or equivalent	
bs	1	Bolt, single upset, insulated	
dn	2	Hanger, T-crossarm, as req'd.	*
do	2	Kicker bracket	*
pa	3	Connector, solderless	*
	1	Link, neutral grounding	*

* Specify these items to be furnished by the manufacturer.

Add Ground Assembly As Required



TYPICAL PLAN SECTION X-X FOR DELTA PRIMARY CONNECTION

NOTES:

All tanks to be grounded.

Secondary neutral shall be disconnected from one tank and not grounded.

Secondary conductors shall be below transformers when communication wires are on the same pole.

For metering assemblies refer to M8-4 for out door type instrument transformers.

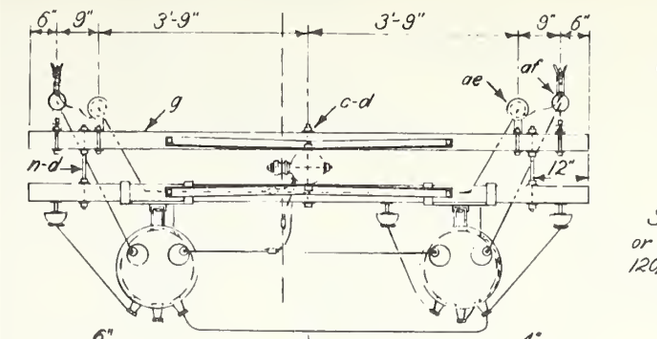
No.	REVISIONS	Date
1	Reissued	8-56

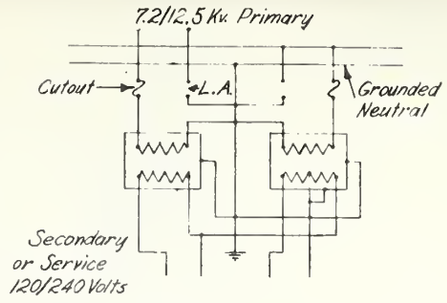
7.2/12.5 KV. PRIMARY 3-PHASE 4-WIRE STAR
TWO CONVENTIONAL TRANSFORMERS
(POLE MOUNTED)

Scale: ½"=1'-0"

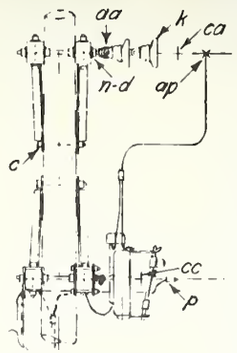
Date: Jan. 15, 1948

G 205-5

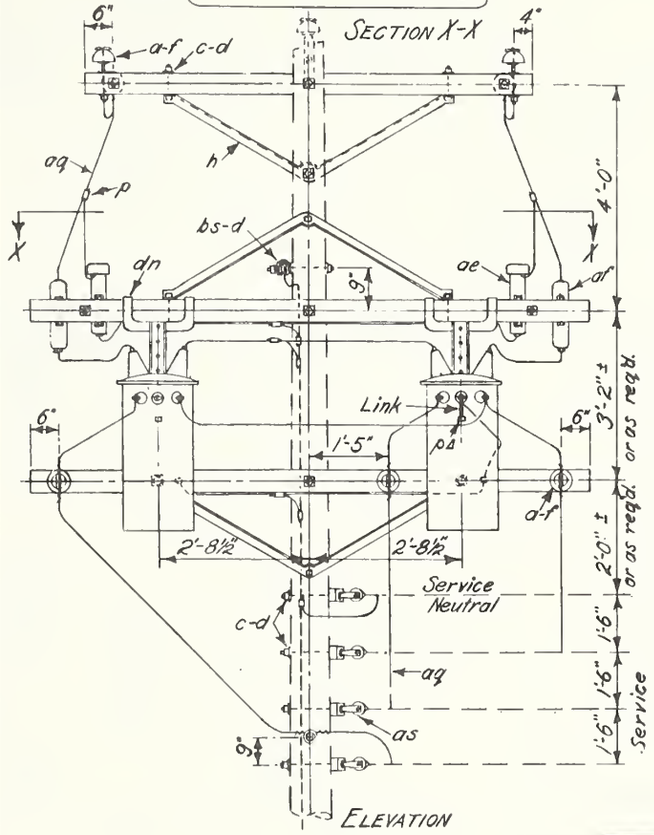




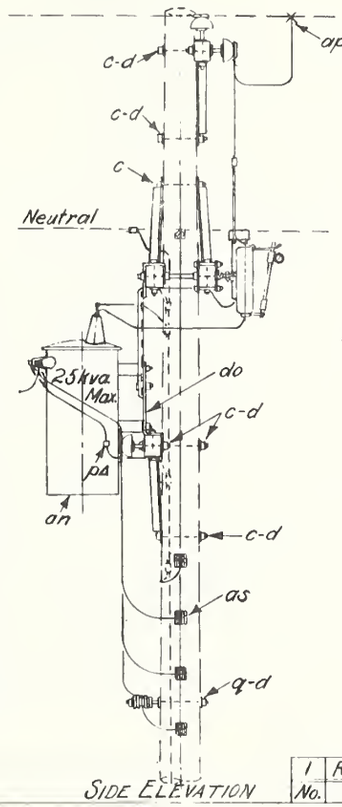
WIRING DIAGRAM



DEADEND ARRANGEMENT



ELEVATION



SIDE ELEVATION

Note: All tanks to be grounded. Secondary neutral shall be disconnected from one tank and not grounded.
If three transformers are desired refer to drawing G 315-5 (B2890).

ITEM	No. Req'd.	MATERIAL	
a	1	Insulator, pin type	
c	8	Bolt, machine, ½" x req'd. length	
c	12	Bolt, machine, ⅝" x req'd. length	
d	8	Washer, round, 1⅜" dia., ⅜" hole	
d	24	Washer; 2 ¼" x 2 ¼" x ⅜", 13/16" hole	
f	1	Pin, crossarm, steel, ⅝" x 10 ¾"	
g	1	Crossarm, 3½" x 4½" x 8'-0"	
g	3	Crossarm, 3¾" x 4¾" x 10'-0"	
h	4	Brace, angle, 1½" x 1½" x ⅜", 60° span	
n	2	Bolt, double arming, ⅝" x req'd. length	
p		Connectors, as req'd.	
q	1	Bolt, double upset, insulated	
ae	2	Lightning arrester	
af	2	Cutout, fuse, single shot	
ai	1	Rod, ground	
aj	1	Clamp, ground rod	
an	2	Transformer, two bushing	
ap	2	Clamp, hot line, tap assembly	
aq		Leads, #6 S.D. or equivalent	
as	4	Clevis, service, swinging, insulated	
bs	1	Bolt, single upset, insulated	
dn	2	Hanger, T-crossarm, as req'd.	*
do	2	Kicker bracket	*
pΔ	3	Connector, solderless	*
	1	Link, neutral grounding	*

* Specify these items to be furnished by the manufacturer.

Note: If secondary conductors are above transformers refer to drawing G305-5.
For metering assemblies refer to drawing M8-4 for outdoor type instument transformers.

Add Ground Assembly As Req'd.

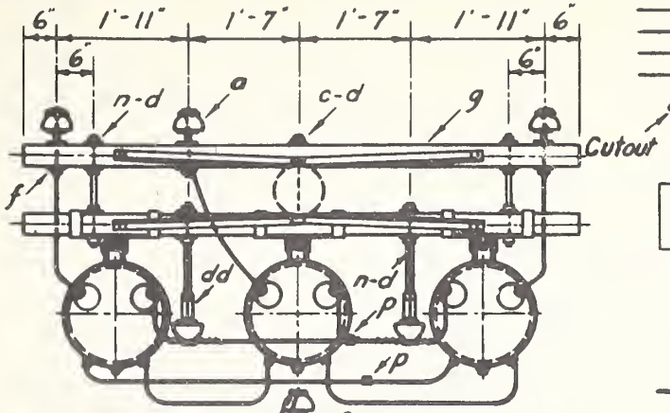
No.	REVISION	DATE
1	Reissued	8-56

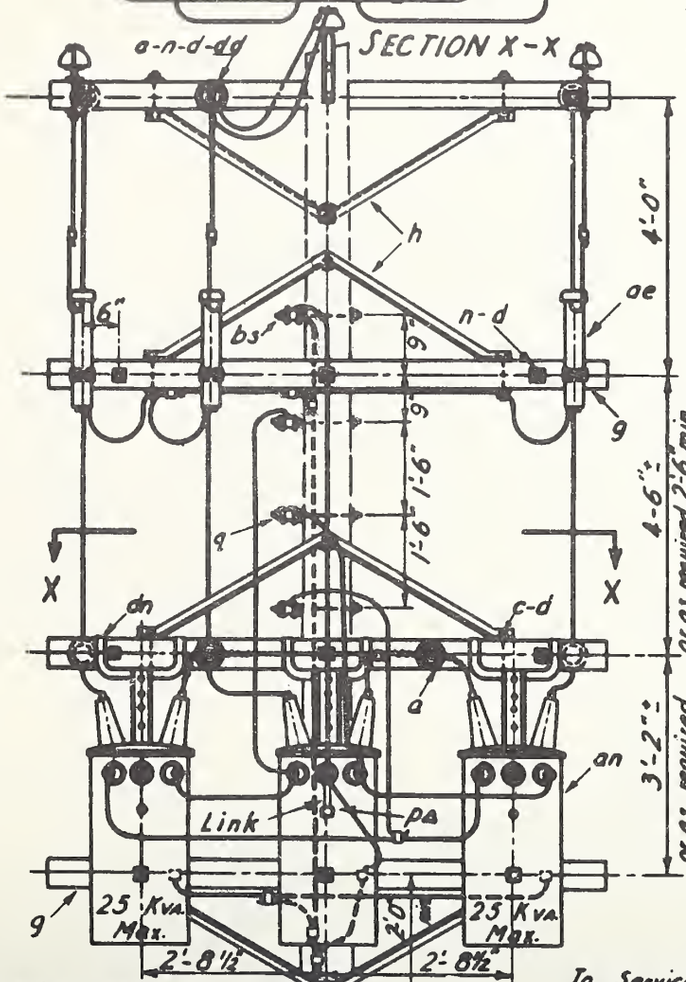
7.2/12.5 KV. PRIMARY, 3-PHASE, 4-WIRE STAR
TWO CONVENTIONAL TRANSFORMERS
(POLE MOUNTED)

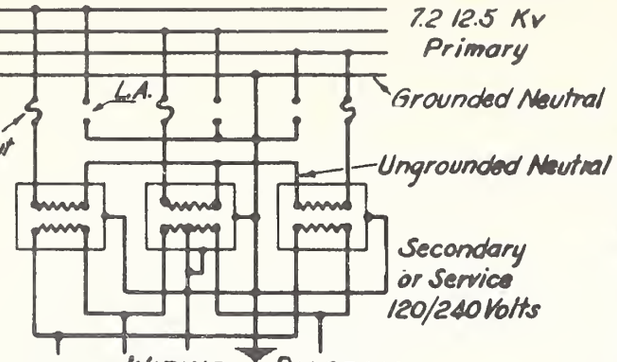
Scale: ½"=1'-0"

Date: Oct 20, 1949

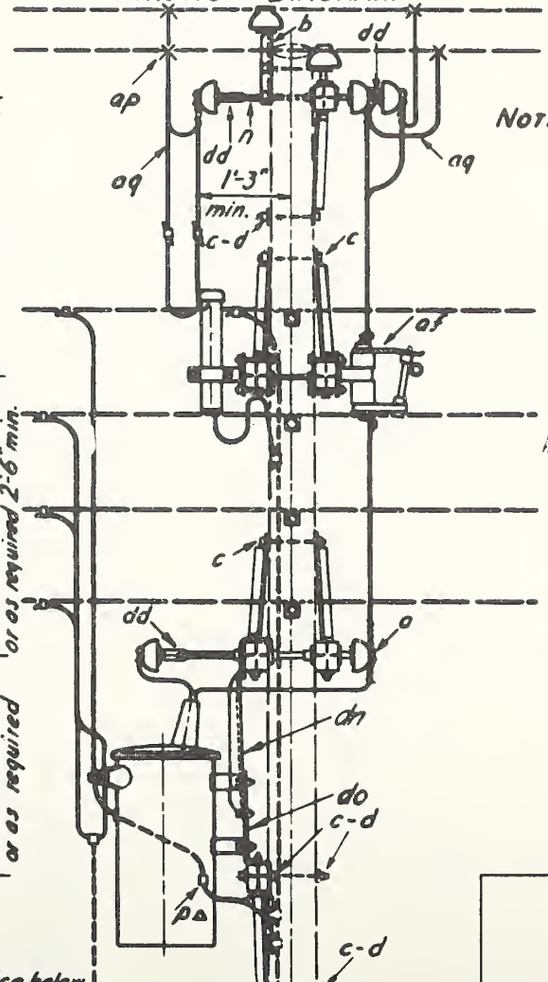
G215-5

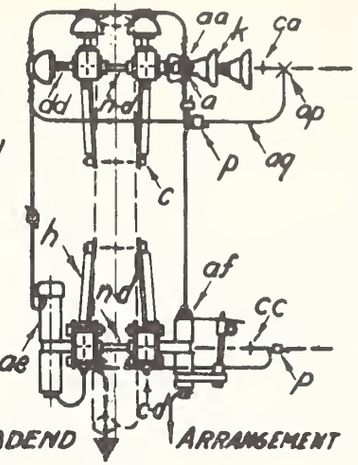






WIRING DIAGRAM





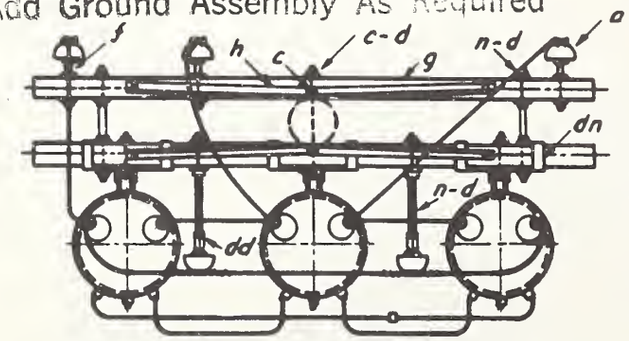
DEADEND ARRANGEMENT

NOTE: All tanks to be grounded. Secondary neutrals of all transformers except one shall be disconnected from tanks and not grounded.
When used for combined light and power load the lighting transformer shall not usually be larger than twice the capacity of one of the others.

ITEM	No. Req'd	MATERIAL	
a	12	Insulators, pin type	
b	1	Pin, poletop	
c	11	Bolts, machine, 3/8" x reqd. length	
c	12	Bolts, machine, 1/2" x reqd. length	
d	38	Washer, 2 1/4" x 2 1/4" x 5/16", 13/16" hole	
d	12	Washer, round, 1 3/8" dia 3/16" hole	
f	7	Pin, crossarm, steel, 3/8" x 10 1/4"	
g	6	Crossarm, 3 1/2" x 4 1/2" x 8'-0" long	
h	6	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60° spn.	
n	7	Bolt, double arming, 3/8" x reqd. lgth.	
p		Connectors, as required	
q	3	Bolt, double upset, insulated	
ae	3	Lightning Arrester	
af	3	Cutout, fuse, single shot	
ai	1	Rod, ground	
an	3	Transformer	
ap	6	Clamp, hot line, tap assembly	
aq		Jumper, #6 S.D. or equivalent	
bs	1	Bolt, single upset, insulated	
dd	4	Adapter, insulator	
dn	3	Hanger, T-crossarm, as reqd.	*
do	3	Kicker bracket	*
pa	4	Connector, solderless	*
	1	Link, neutral grounding	*
aj	1	Clamp, ground rod	

* Specify these items to be furnished by the manufacturer.

Add Ground Assembly As Required



TYPICAL PLAN SECTION X-X FOR DELTA PRIMARY CONNECTION

NOTE: Secondary conductors shall be below transformers when communication wires are on the same pole.

NOTE: For metering assemblies refer to drawings M8-4 for outdoor type instrument transformers

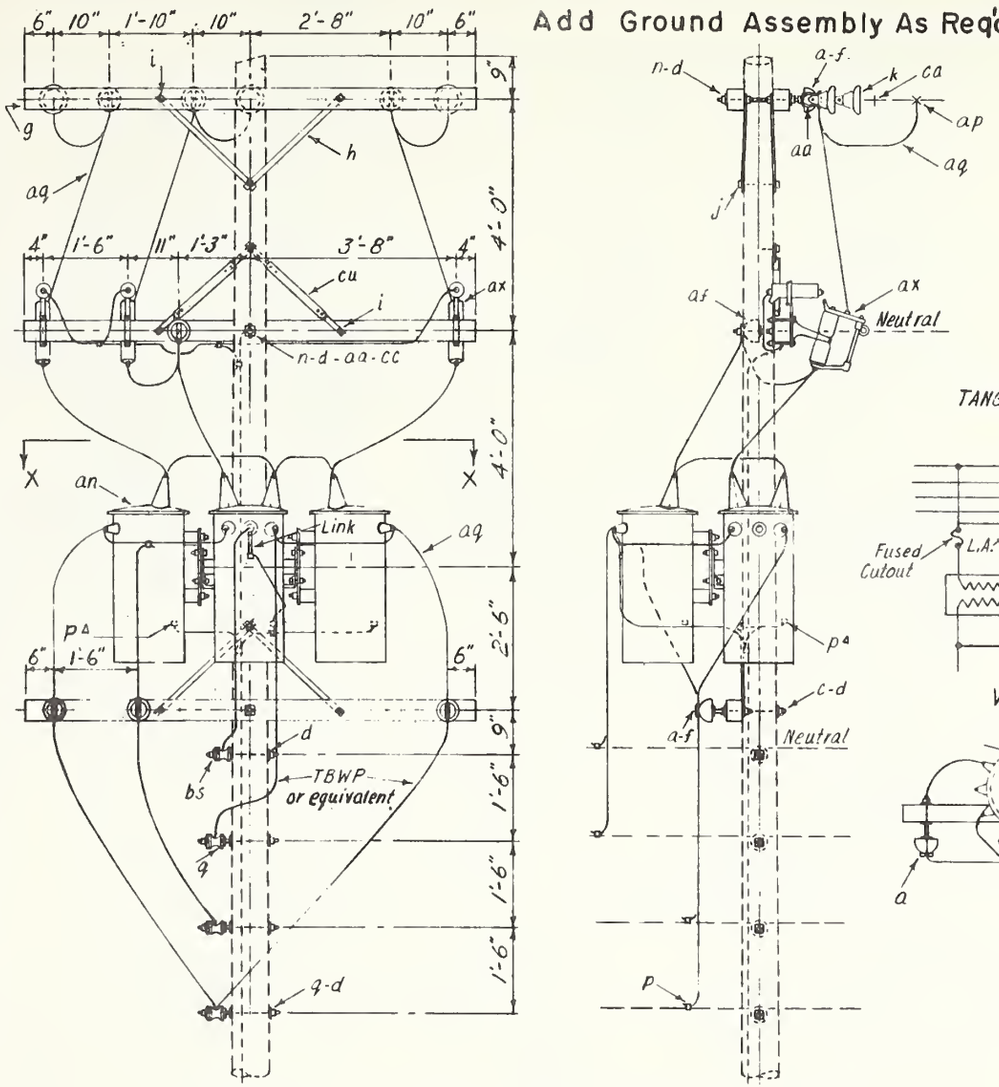
1	Reissued	8-56	
No.	REVISION	Date.	

7.2/12.5 Kv. PRIMARY 3-PHASE 4-WIRE STAR
THREE CONVENTIONAL TRANSFORMERS
(POLE MOUNTED)

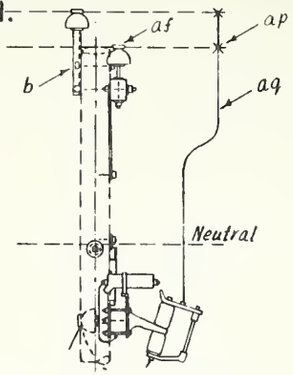
Scale: 1½"=1'0"

Date: Jan. 15, 1948

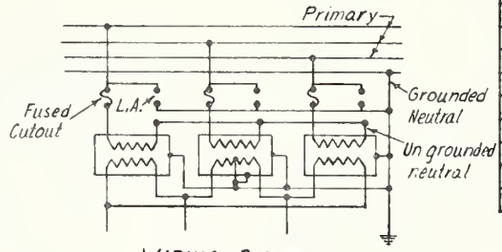
G 305-5



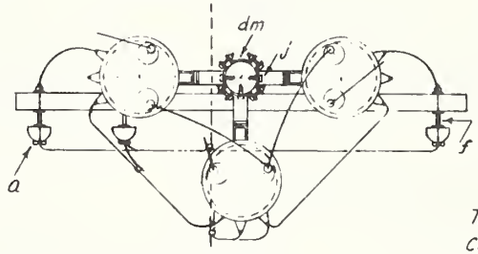
ELEVATION



TANGENT LINE ASSEMBLY



WIRING DIAGRAM



SECTION X-X

Note: When used for combined light and power load the lighting transformer shall not be larger than twice the capacity of one of the others.

ITEM	No. Reqd	MATERIAL
a	7	Insulator, pin type
c	1	Bolt, machine, 5/8" x required lgth.
d	18	Washer, 2¼"x2¼"x 5/16", 13/16" hole
f	7	Pin, crossarm, steel, 5/8"x10¾"
g	4	Crossarm, 3½"x4½"x 8'-0"
h	6	Brace, 1¼"x¼"x 28"
i	8	Bolt, carriage, 5/8"x4½"
j	7	Screw, lag, ½"x4"
k	6	Insulator, suspension
n	4	Bolt, double arming, 5/8"x reqd. lgth.
p		Connectors, as required
q	3	Bolt, double upset, insulated
aa	4	Nut, eye, 5/8"
cu	2	Brace, wood, 28"
an	3	Transformer, 15 kva. max.
ap	3	Clamp, hot line, tap assembly
aq		Jumper, primary, bare, as reqd.
aq		Jumper, secondary, TBWP or equiv.
ax	3	Cutout and Arrester combination
bs	1	Bolt, single upset insulated
ca	3	Deadend assembly, primary
cc	1	Deadend, assembly, neutral
dm	1	Bracket, transformer, cluster type-
		with adapter plates
p△	4	Connector, solderless *
	1	Link, neutral grounding *

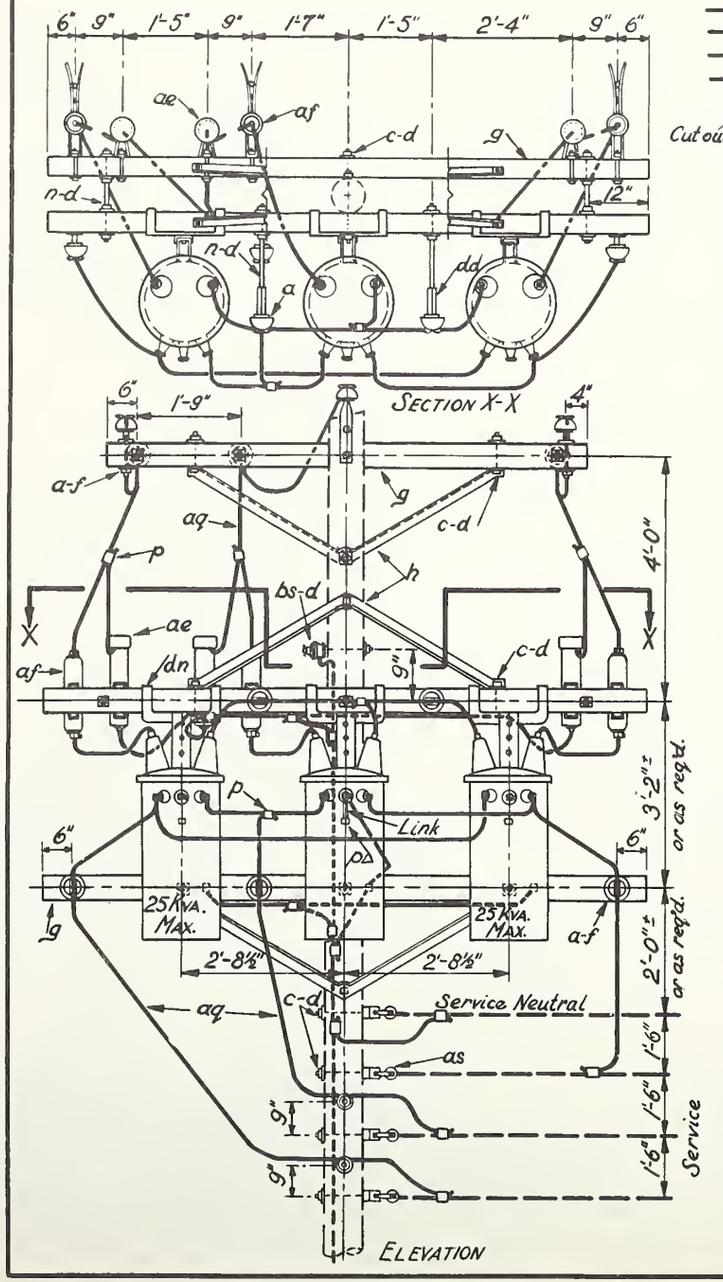
* Specify these items to be furnished by the manufacturer.

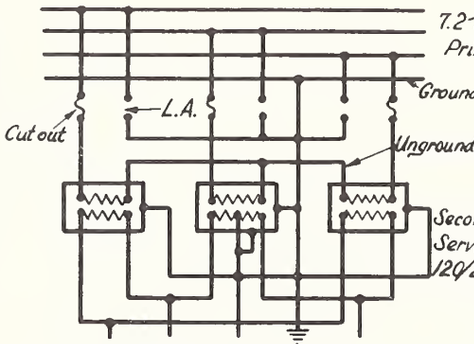
Notes:
All tanks to be grounded.
Secondary neutrals of all transformers except one shall be disconnected from tanks, and not grounded.

For V-Phase installations omit Transformer and related items on center phase. Designate as assembly G 2 10-5 and refer to G 2 15-5 for wiring diagram.

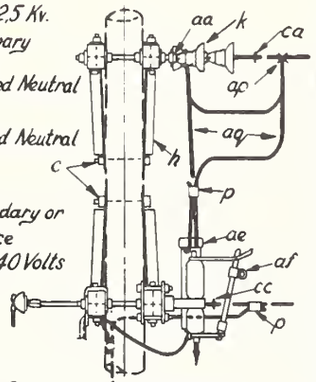
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
THREE CONVENTIONAL TRANSFORMER'S
FOR LIGHTING AND 240 V. POWER LOAD
POLE MOUNTED WITH CLUSTER TYPE STEEL BRACKET

Scale: ½"=1'-0" | Date: July 12, 1955 | G 3 10-5

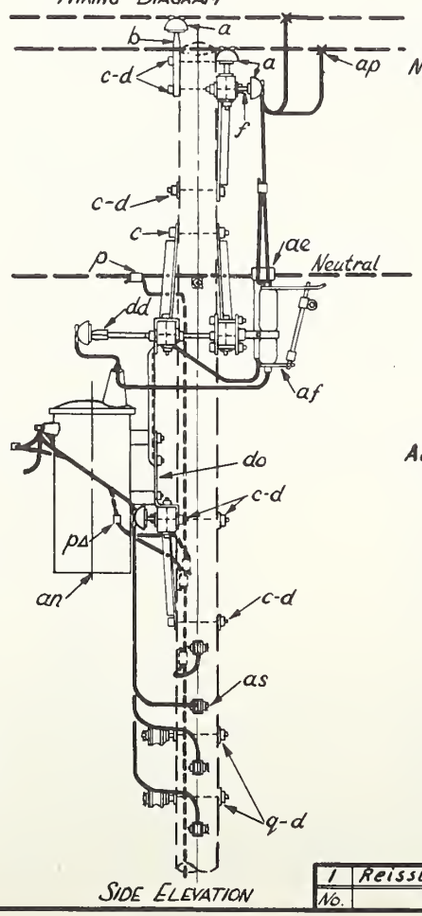




WIRING DIAGRAM



DEADEND ARRANGEMENT



Note: All tanks to be grounded. Secondary neutrals of all transformers except one shall be disconnected from tanks and not grounded. When used for combined light and power load, the lighting transformer shall not usually be larger than twice the capacity of one of the others.

ITEM	No. Req'd	MATERIAL	
a	11	Insulator, pin type	
b	1	Pin, poletop, 15"	
c	13	Bolt, machine, 5/8" x req'd. length	
c	8	Bolt, machine, ½" x req'd. length	
d	29	Washer, 2¼" x 2¼" x 3/16" x 13/16" hole	
d	8	Washer, round, 1⅜" dia. 9/16" hole	
f	8	Pin, crossarm, steel, ⅝" x 10¾"	
g	3	Crossarm, 3¾" x 4¾" x 10'-0"	
g	1	Crossarm, 3½" x 4½" x 8'-0"	
h	4	Brace, angle, 1½" x 1½" x 3/16", 60° span	
n	4	Bolt, double arming, ⅝" x r'q'd. l'gth	
p		Connectors, as req'd.	
q	2	Bolt, double upset, insulated	
ae	3	Lightning Arrester	
af	3	Cutout, fuse, single shot	
ai	1	Rod, ground	
aj	1	Clamp, ground rod	
an	3	Transformer	
ap	3	Clamp, hot line	
aq		Jumpers	
as	4	Clevis, service, swinging, insulated	
bs	1	Bolt, single upset, insulated	
dd	2	Adapter, insulator	
dn	3	Hanger, T-crossarm, as req'd.	•
do	3	Kicker bracket	•
pa	4	Connector, solderless	•
	1	Link, neutral grounding	•

• Specify these items to be furnished by the manufacturer.

Note: If secondary conductors are above transformers refer to drawing G305-5

For metering assemblies refer to drawing M8-4 for outdoor type instrument transformers.

Add Ground Assembly As Req'd.

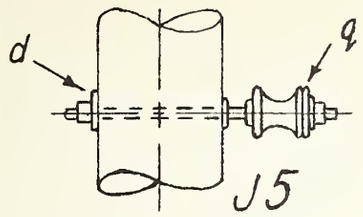
No.	REVISION	DATE
1	Reissued	8-56

7.2/12.5 Kv. PRIMARY, 3-PHASE, 4-WIRE STAR
THREE CONVENTIONAL TRANSFORMERS
(POLE MOUNTED)

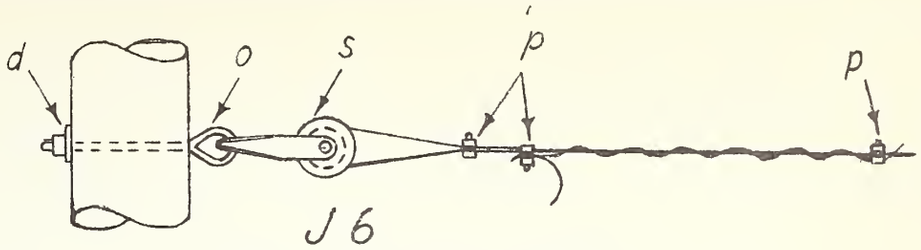
Scale: ½"=1'-0"

Date: Apr. 19, 1949

G315-5

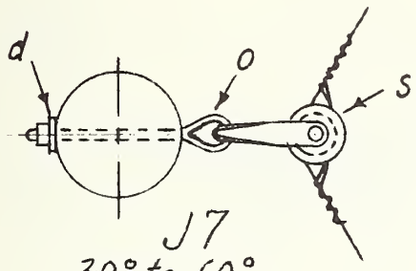


J5



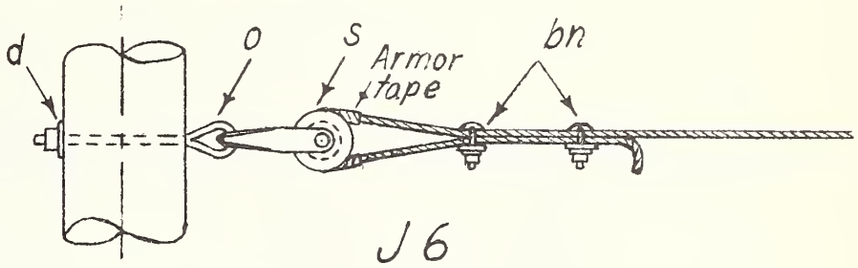
J 6

For use on copper



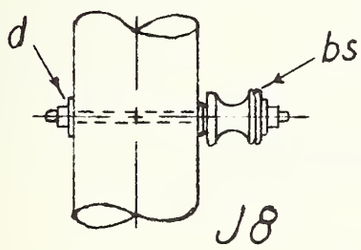
J 7

30° to 60°

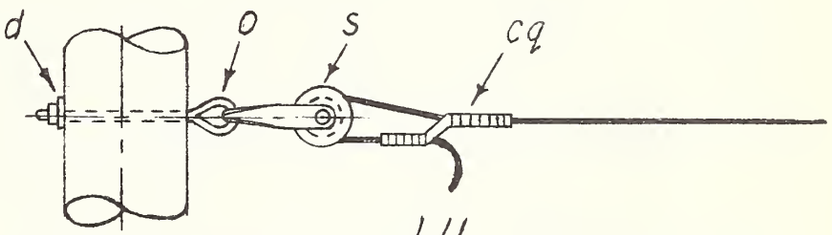


J 6

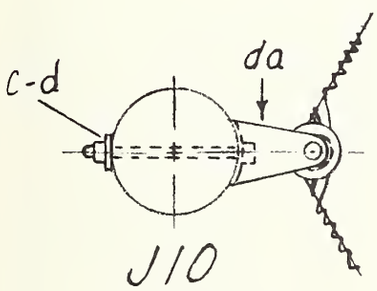
For use on aluminum



J8

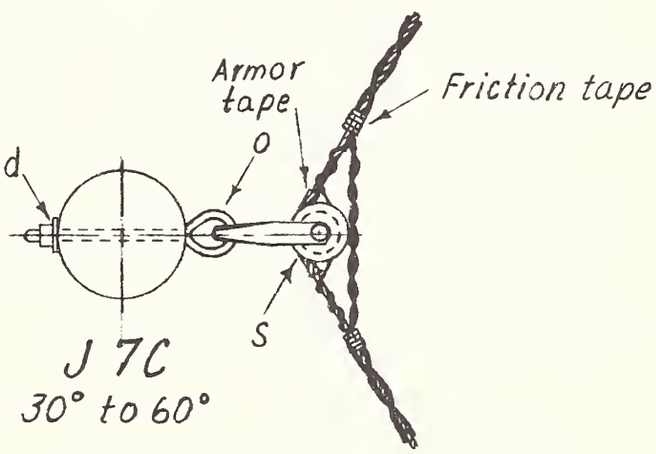


J 11



J 10

5° to 60°



J 7C

30° to 60°

For use on Self Supporting Service Cable

ITEM	NO. REQ'D.	MATERIAL			MATERIAL
c		Bolt, machine, 5/8" x req'd. length	bs		Bolt, single upset insulated
d		Washer, 2 1/4 x 2 1/4" x 3/16", 13/16" hole	bn		Clamp, loop deadend
o		Bolt, eye, 5/8" x req'd. length	cq		Sleeve, offset, splicing
p		Connectors, as required	da		Bracket, insulated
q		Bolt, double upset, insulator			
s		Clevis, secondary, swinging, insulated			

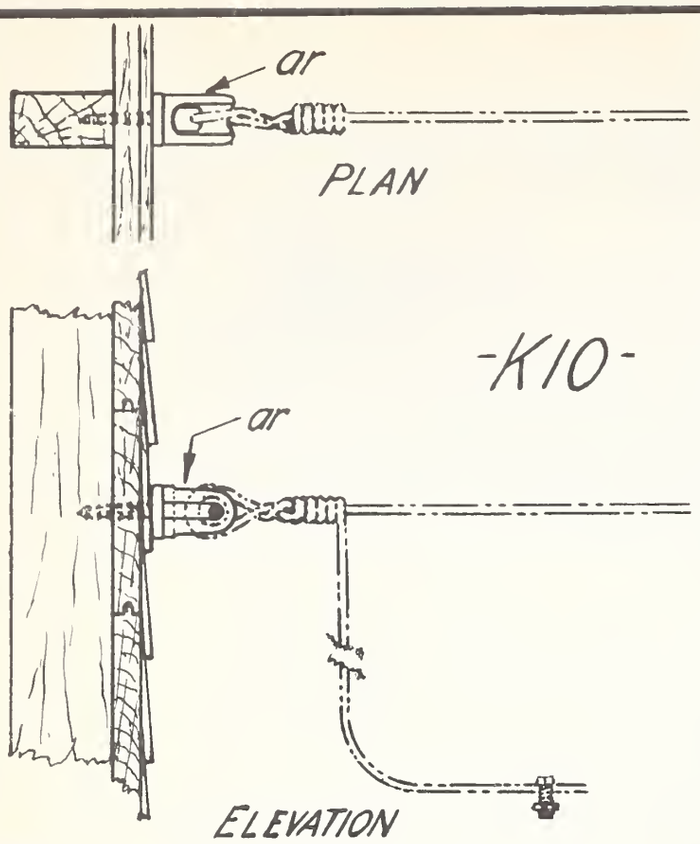
SECONDARY ASSEMBLIES

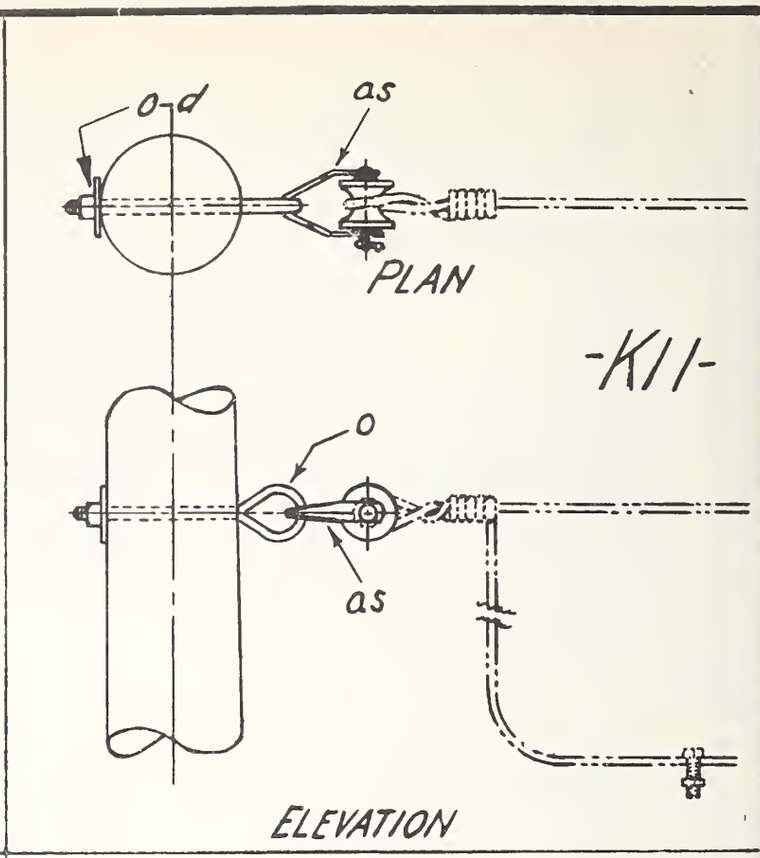
No.	REVISION	
1	Added J 7-C	7-12-56

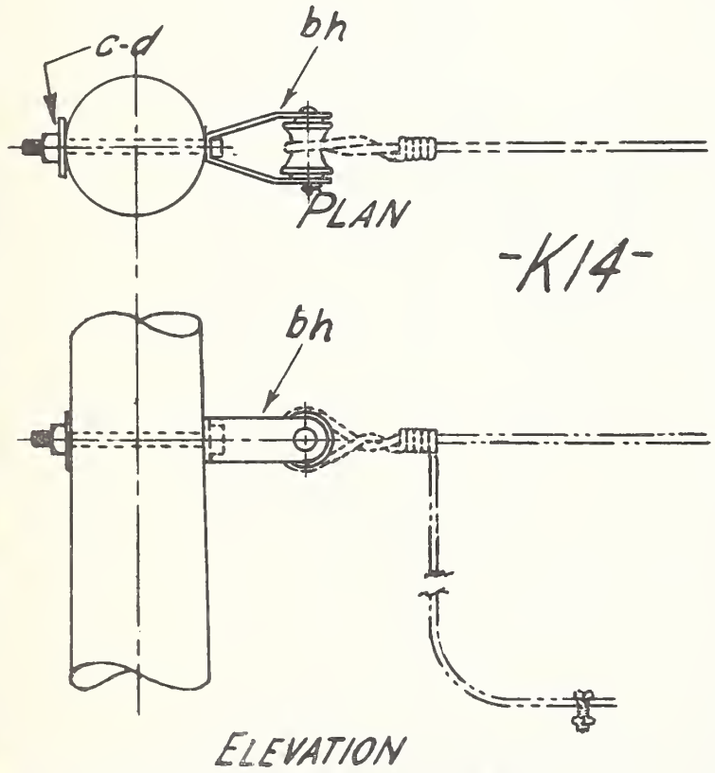
Scale: N.T.S.

Date: July 20, 1948

J5 TO J11







ITEM		MATERIAL		ITEM		MATERIAL	
c		Bolt, machine, 3/8" x req'd length		bh		Clevis, service, deadend, insulated	
d		Washer, 2 1/4" x 2 1/4" x 5/16", 13/16" hole		o		Bolt, eye, 5/8" x req'd. length	
ar		Wireholder					
as		Clevis, service, swinging, insulated					

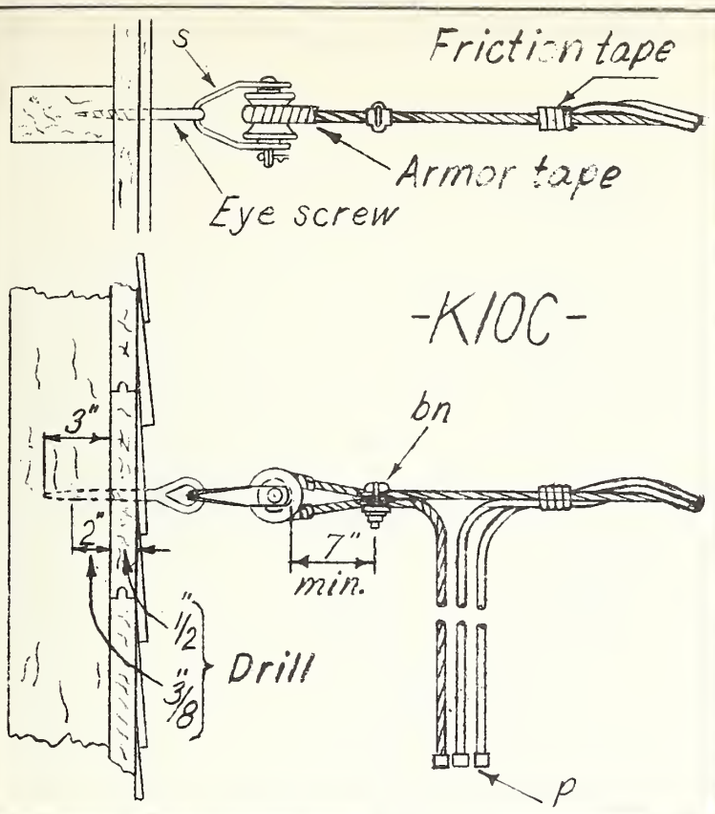
NO.	REVISION	DATE:
1	Reissued	8-56

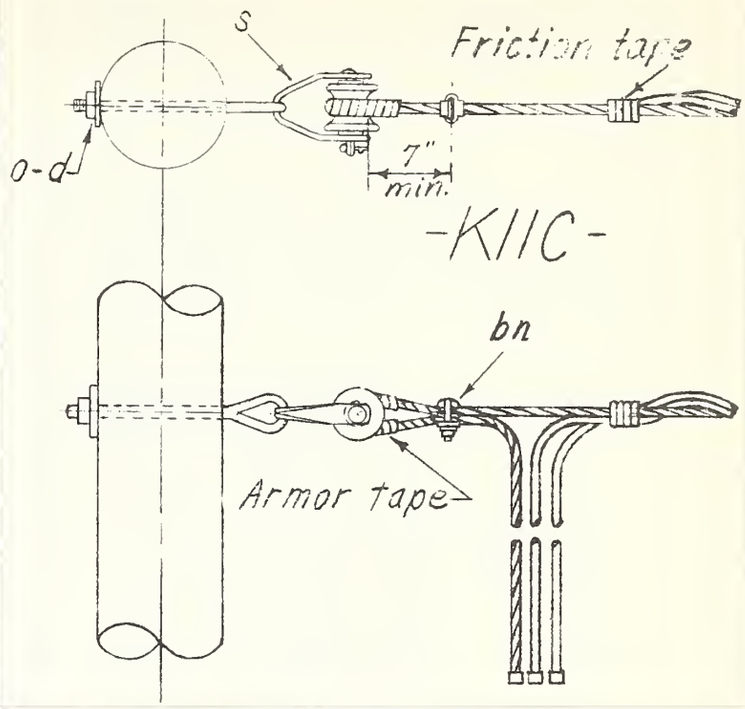
SERVICE ASSEMBLIES

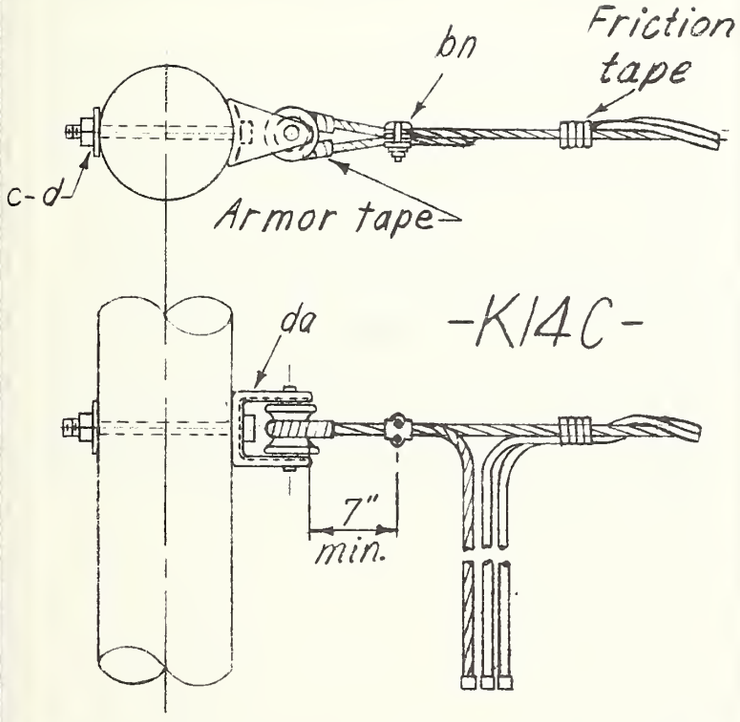
Scale: 1 1/2" = 1'-0"

Date: Sept. 30, 1952

K10, K11, K14







NOTES:

This type construction should be used for 3-conductor service cables with bare A.C.S.R. neutral.

Eye screw to be wrenched in.

For brick or concrete walls use 3/4" x 3 1/2" expansion shield in 3/4" x 4" hole.

Groove diameter of insulators 1 3/4" minimum.

ITEM		MATERIAL		ITEM		MATERIAL	
c		Bolt, machine, 5/8" x req'd length		bn		Clamp, loop deadend	
d		Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		da		Bracket, insulated	
o		Bolt, eye, 5/8" x req'd length		dq		Screw, eye, elliptical, 1/2" x 6"	
s		Clevis, secondary, swinging, insulated		p		Connectors, as required	

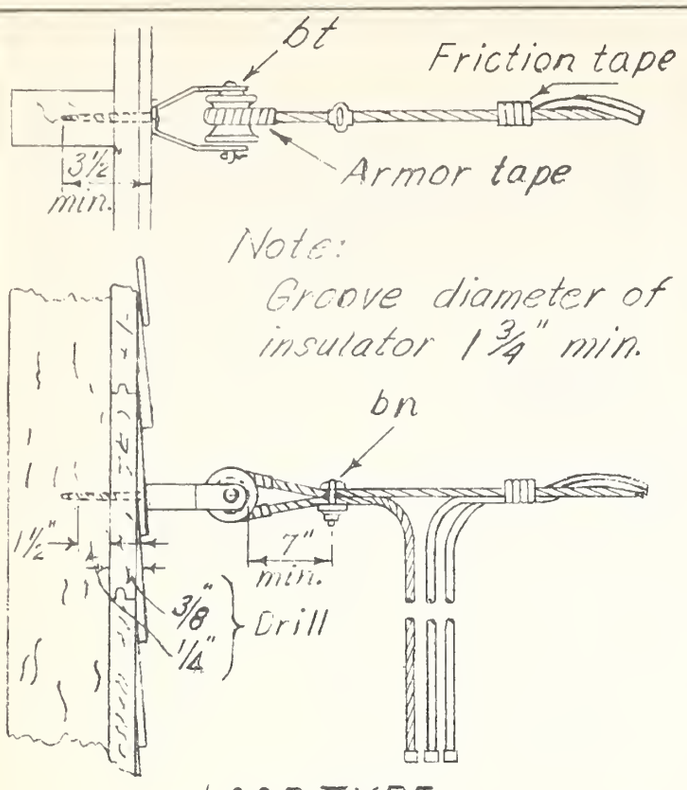
SERVICE ASSEMBLIES, CABLE

NO.	REVISION	DATE
1	Reissued	8-56

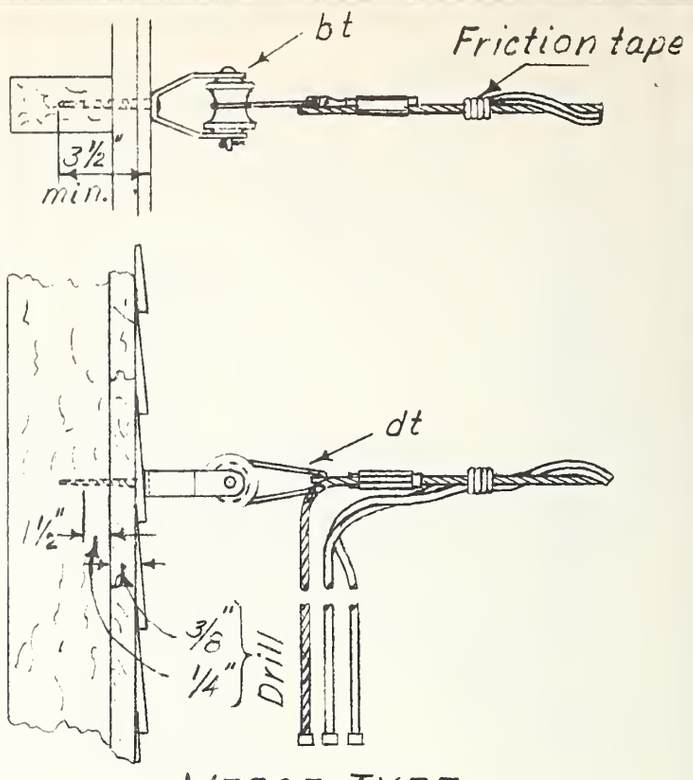
Scale: 1 1/2" = 1'-0"

Date: Mar. 11, 1952

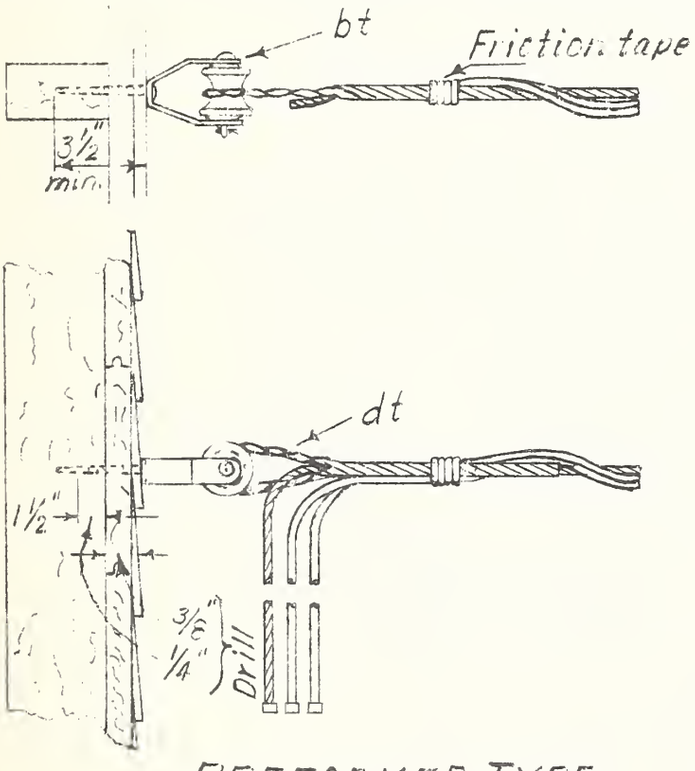
K10C, K11C, K14C



LOOP TYPE



WEDGE TYPE



PREFORMED TYPE

Notes:

The wedge and preformed types may be substituted on assembly drawings K10C, K11C, K14C and K16C.

This type construction should be used for 3-conductor service cables with bare ACSR neutral.

ITEM		MATERIAL		ITEM		MATERIAL	
bt		Wireholder, clevis type,		dt		Service deadend, wedge type	
		#24 woodscrew, insulated		dt		Service deadend, preformed type	
p		Connectors, as required					
bn		Clamp, loop deadend					

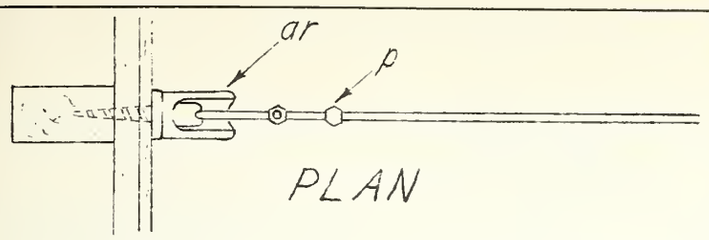
SERVICE ASSEMBLIES, CABLE

No.	REVISION	DATE:
1	Revised	7-29-55

Scale: 1" = 1'-0"

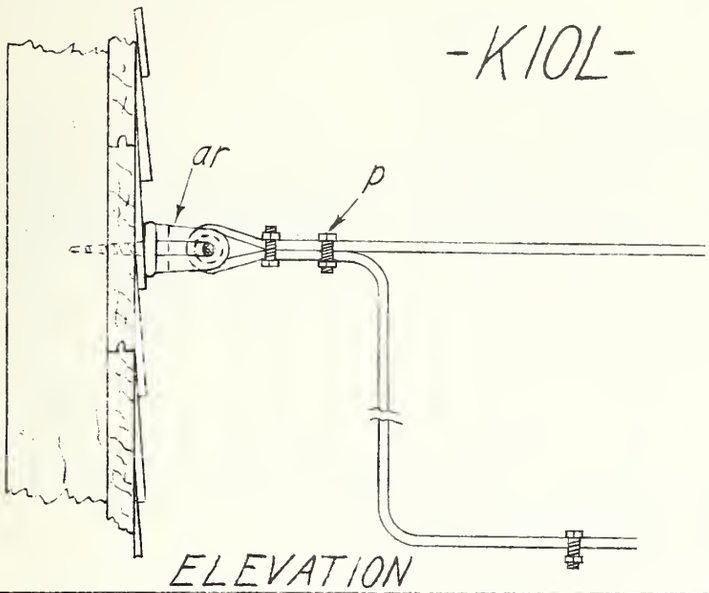
Date: Feb. 24, 1953

K10CA

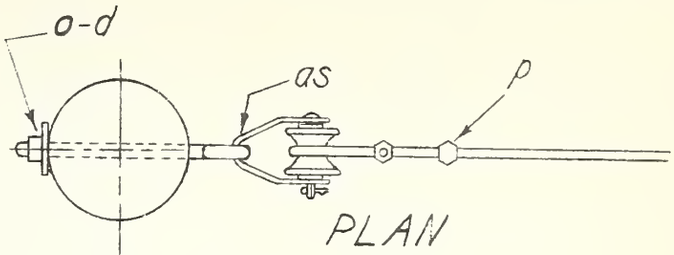


PLAN

-K10L-

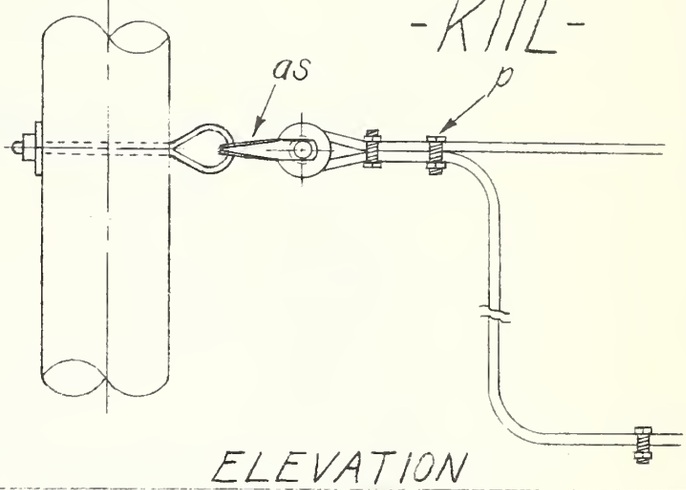


ELEVATION

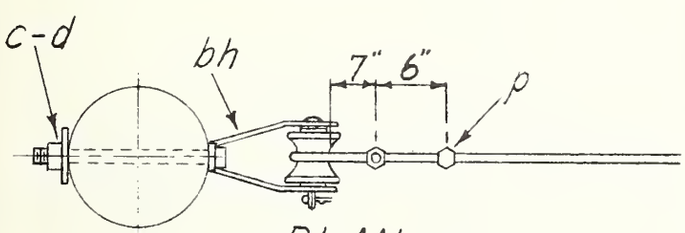


PLAN

-K11L-

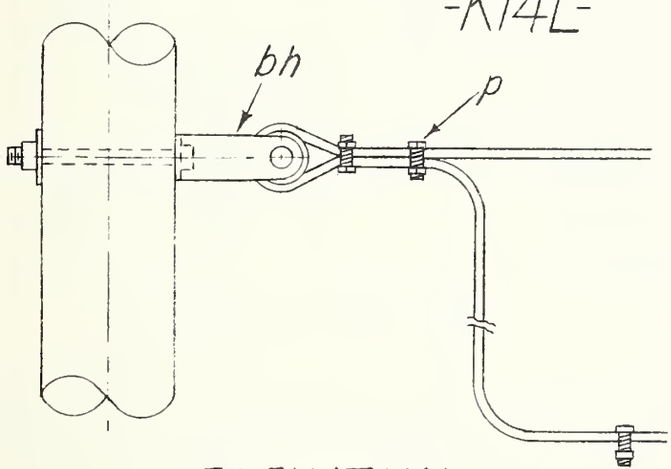


ELEVATION



PLAN

-K14L-



ELEVATION

NOTE 1:

This type construction should be used for No. 2 aluminum weather-proof conductor and larger.

NOTE 2:

Connectors to be applied over bare wire and then taped as required.

ITEM		MATERIAL		ITEM		MATERIAL	
c		Bolt, machine, 5/8" x req'd length		bh		Clevis, service, deadend, insulated	
d		Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		p		Connectors, as required	
ar		Wireholder		o		Bolt, eye, 5/8" x reqd. length	
as		Clevis, service, swinging, insulated					

NO.	REVISION	DATE
1	Reissued	8-56

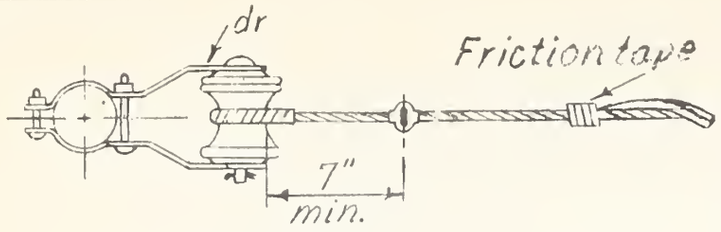
SERVICE ASSEMBLIES

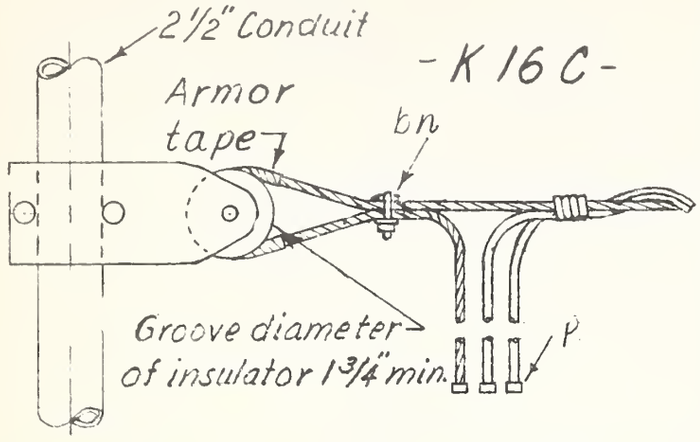
(LARGE CONDUCTORS)

Scale: 1½"=1'-0"

Date: Mar. 25, 1952

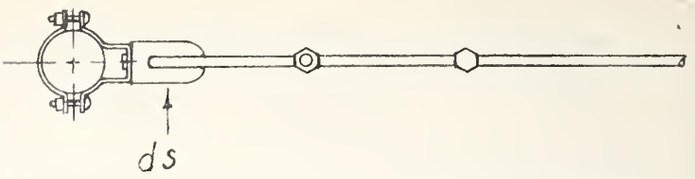
K10L, K11L, K14L



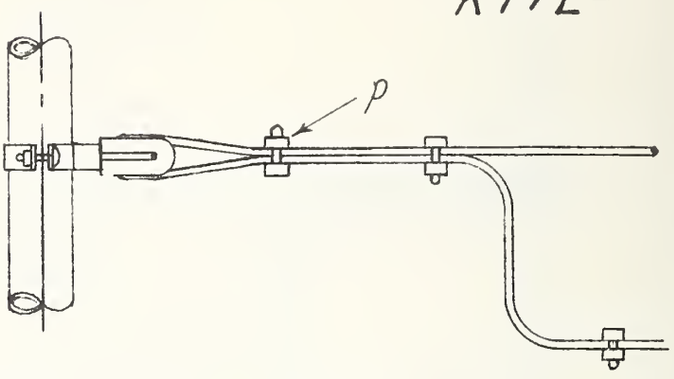


-K16C-

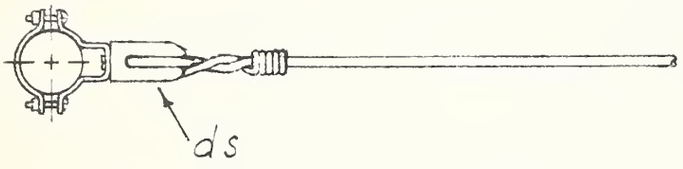
NOTE: This type construction should be used for three conductor service cables with bare ACSR neutral.



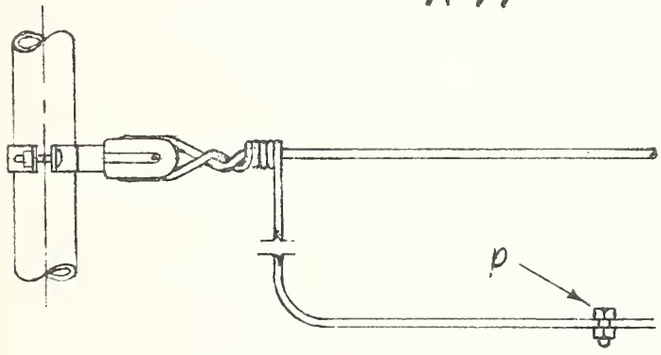
-K17L-



NOTE: This type construction should be used for No. 2 aluminum weather-proof conductor.



-K17-



NOTES:

1. Connectors to be applied over bare wire and then taped as required.
2. For arrangement of service assembly units see drawing M 24-10

ITEM		MATERIAL		ITEM		MATERIAL	
p		Connectors, as required		bn		Clamp, loop deadend	
dr		Clevis, conduit insulated					
ds		Wireholder, conduit					

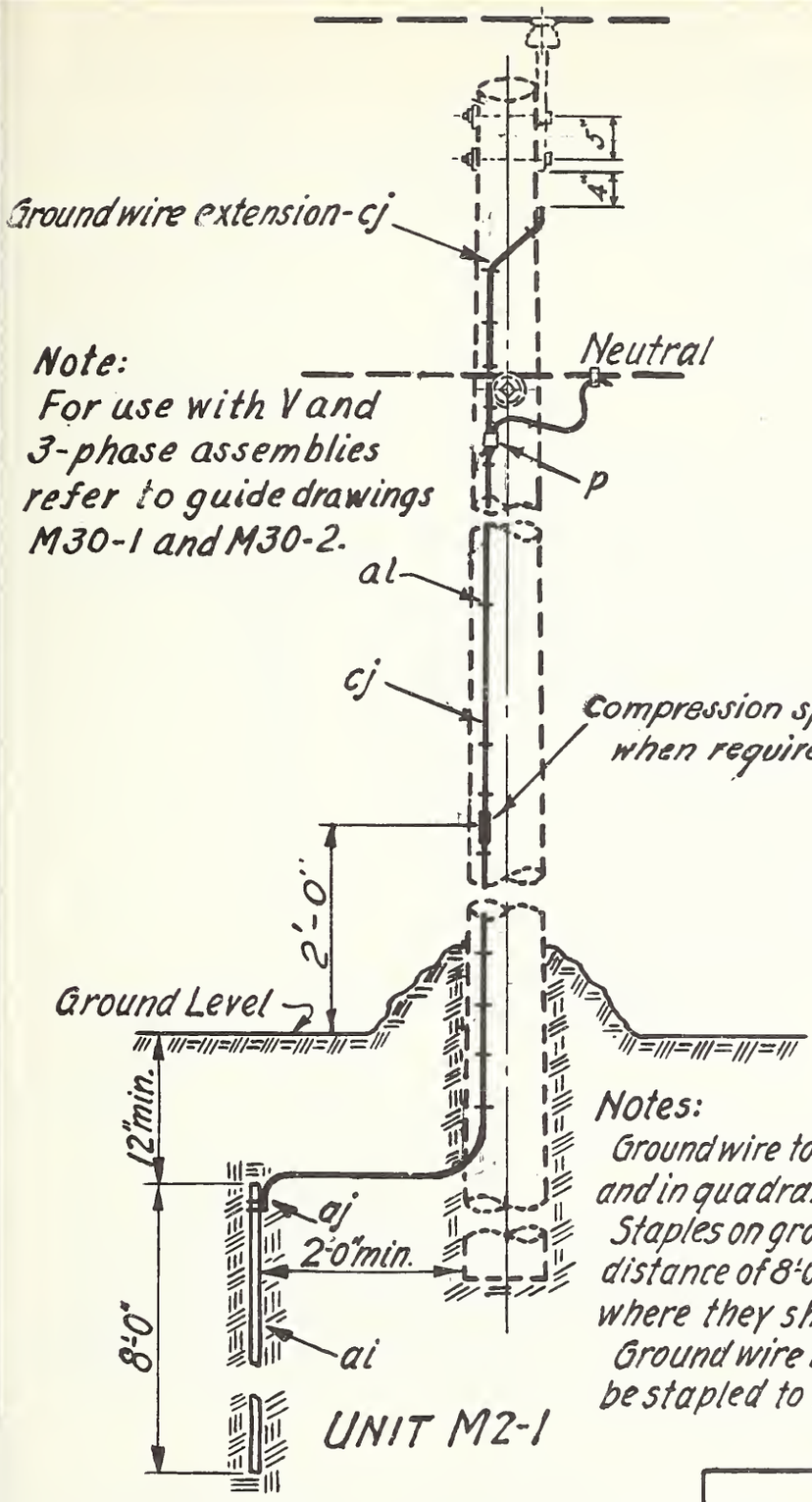
NO.	REVISION	DATE:
1	Reissued	8-56

SERVICE ASSEMBLIES (FOR RANCH TYPE HOUSES)

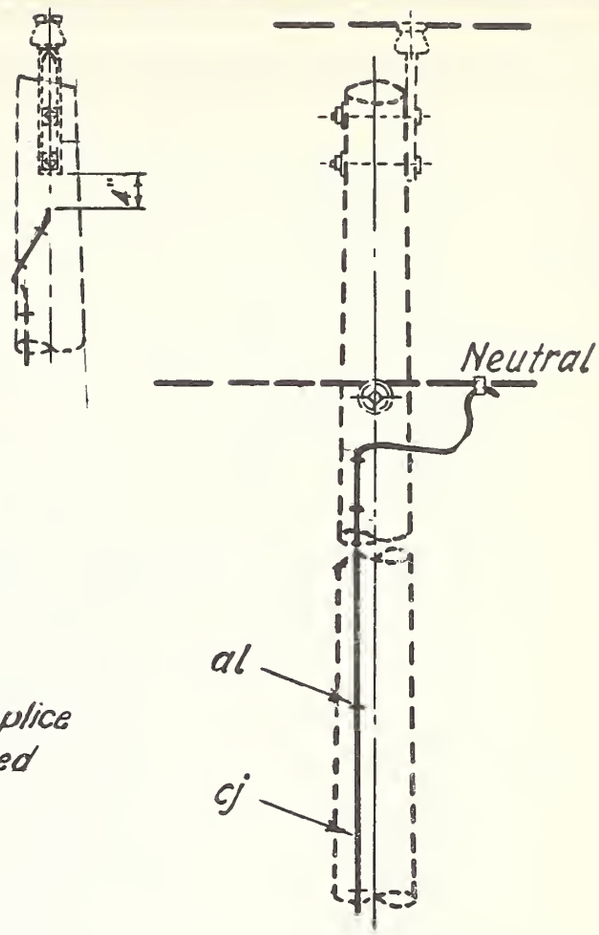
Scale: 1½"=1'-0"

Date: Mar. 1, 1954

K16C, K17, K17L



UNIT M2-1



UNIT M2-11
similar to Unit M2-1 except as shown.

Notes:

Groundwire to be located on same side as Neutral Conductor and in quadrant opposite climbing space or pole top pin.

Staples on groundwire shall be 2'-0" apart, except for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.

Groundwire to clear all hardware by 2" min. and shall be stapled to maintain this position.

		ASSEMBLY UNIT		
ITEM	MATERIAL	M2-1	M2-11	
p	Connector	2	1	
ai	Rod, ground, 5/8" dia. min.	1	1	
aj	Clamp, ground rod	1	1	
al	Staples, ground wire, 3/16" x 1 1/2" #9, as req'd.			
cj'	Groundwire, #6 S.D. Copper or equiv.	1	1	
cj	Ground wire extension, #6 S.D. Copper "	1		

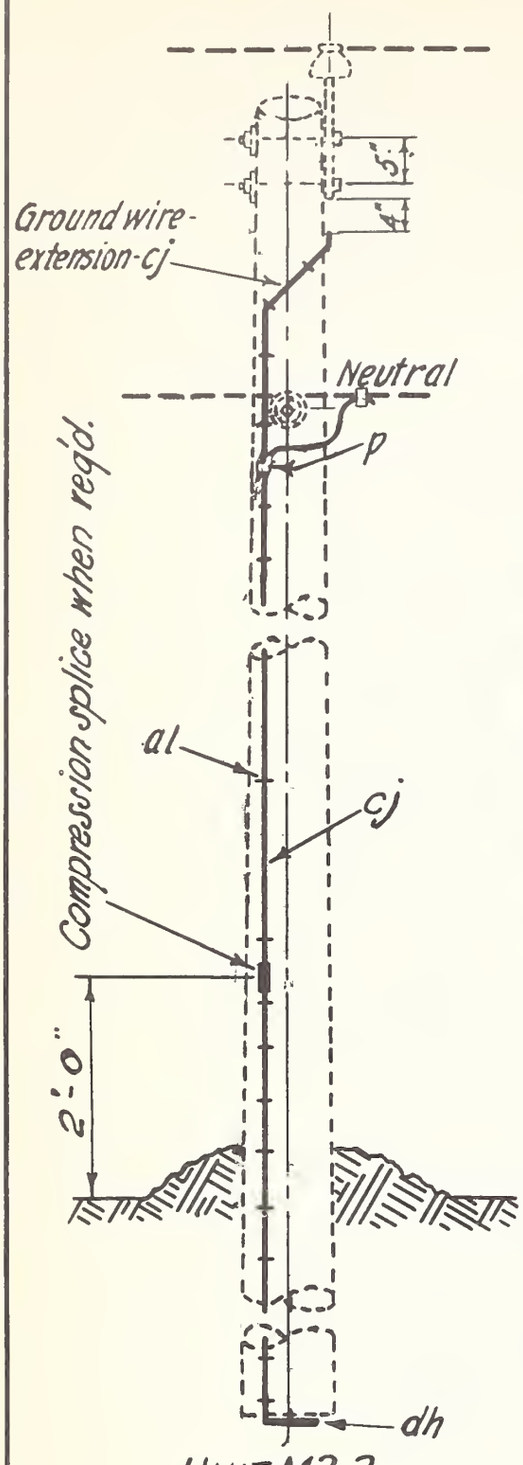
GROUNDING ASSEMBLY—GROUND ROD TYPE

NO.	REVISION	DATE:
1	Revised	4-12-56

Scale: 1/2" = 1'-0"

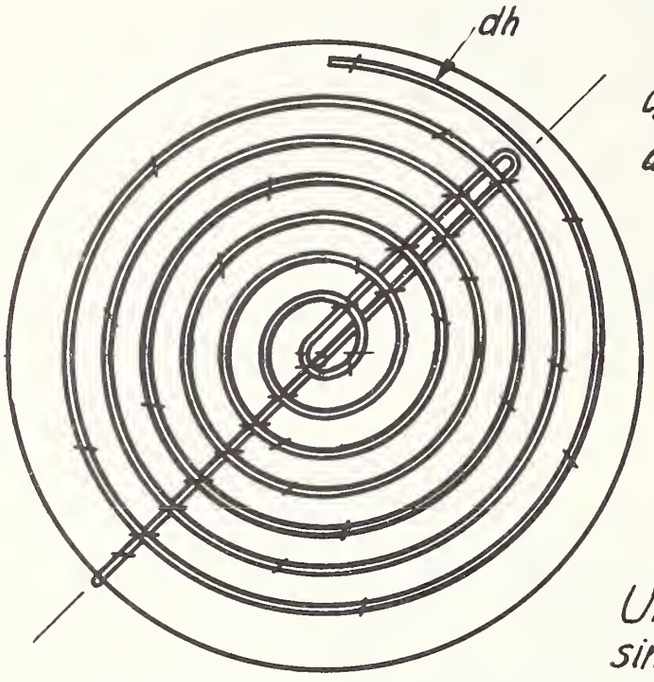
Date:

M2-1, M2-11.

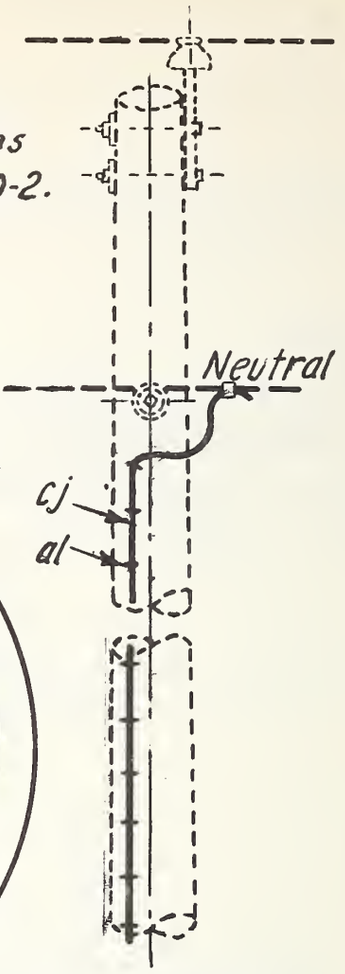


UNIT M2-2

Note: For use with V and 3-phase assemblies refer to guide drawings M30-1 and M30-2.



PLAN OF COIL TYPE GROUND
Scale: 3"=1'-0"



UNIT M2-12
similar to Unit M2-2 except as shown

NOTES:
Ground wire to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
Staples on ground wire shall be 2'-0" apart, except for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.
Ground wire to clear all hardware by 2" min. and shall be stapled to maintain this position.

		ASSEMBLY UNIT		
ITEM	MATERIAL	M2-2	M2-12	
p	Connectors	2	1	
al	Staples, ground wire, 3/16" x 1 1/2" x #9, as req'd.			
cj	Ground wire, #6 S.D. Copper or equiv'nt.	1	1	
dh	Butt type grounding device, coil or plate	1	1	
cj	Ground wire extension, #6 S.D. Copper	1		

POLE PROTECTION ASSEMBLY-BUTT TYPE (COIL, PLATE OR ROD)

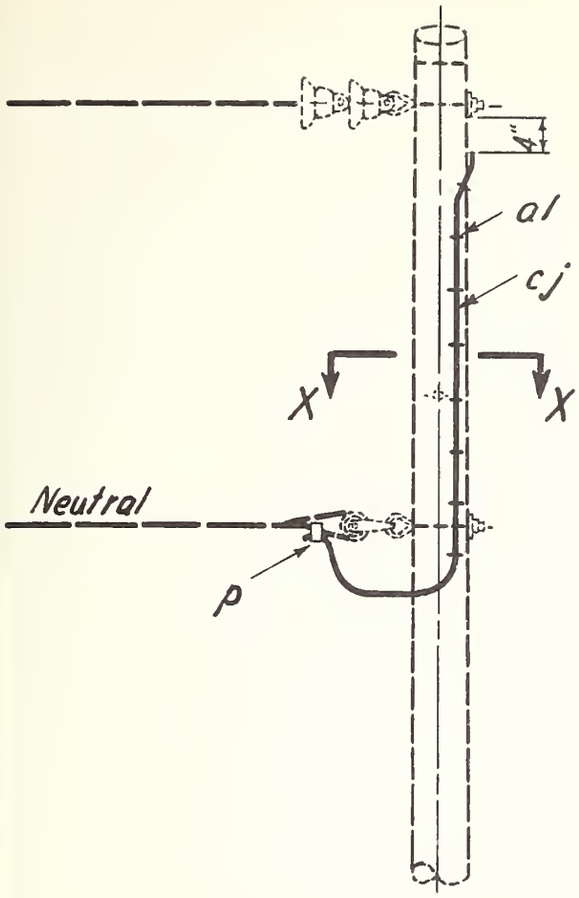
NO.	REVISION	DATE:
1	Revised	4-12-56

Scale: 1/2"=1'-0"

Date:

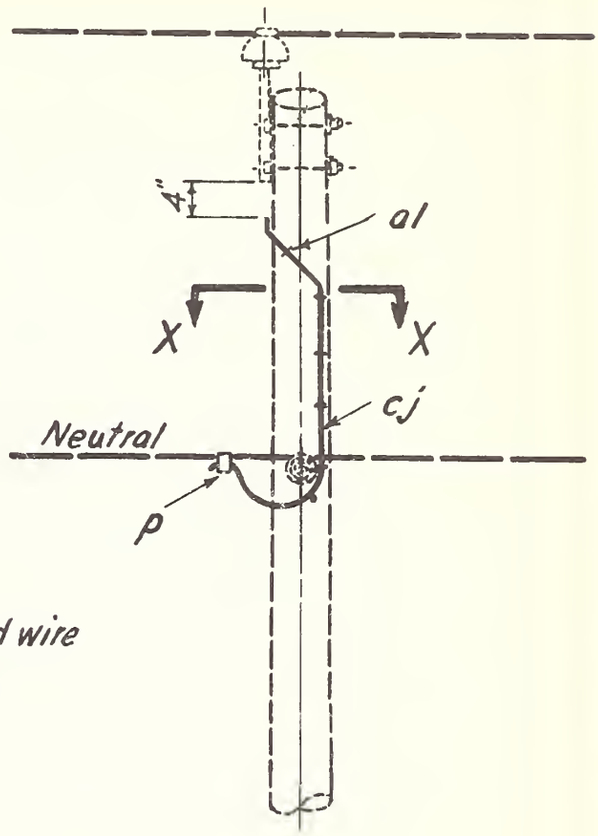
M2-2, M2-12

Note: For use with V and 3-phase assemblies refer to guide drawings M30-1 and M30-2.



DEADEND ARRANGEMENT

SECTION X-X



TANGENT ARRANGEMENT

NOTES:

1. Ground wire to be located on same side as Neutral Conductor and in quadrant opposite climbing space.
2. Staples on ground wire to be 6" apart.
3. Ground wire to clear all hardware by 2" min. and shall be stapled to maintain this position.

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
p	1	Connector					
a1		Staples groundwire, 3/16" x 1½"					
cj		Ground Wire, #6 S.D. copper or equiv.					

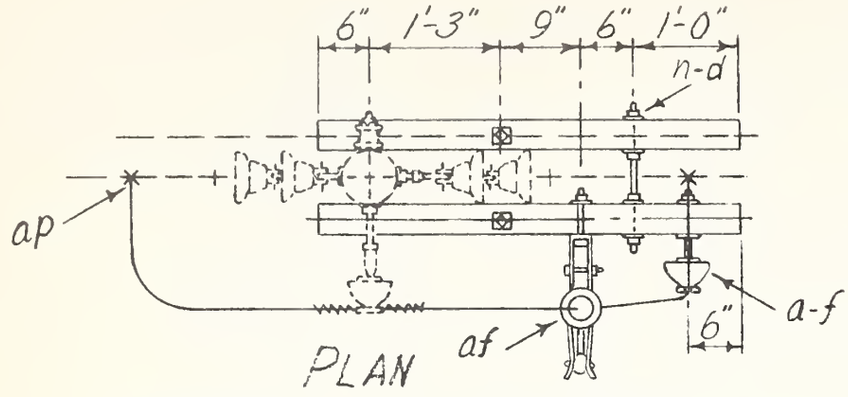
POLE TOP PROTECTION ASSEMBLY

NO.	REVISION	DATE
1	Revised	4-12-56

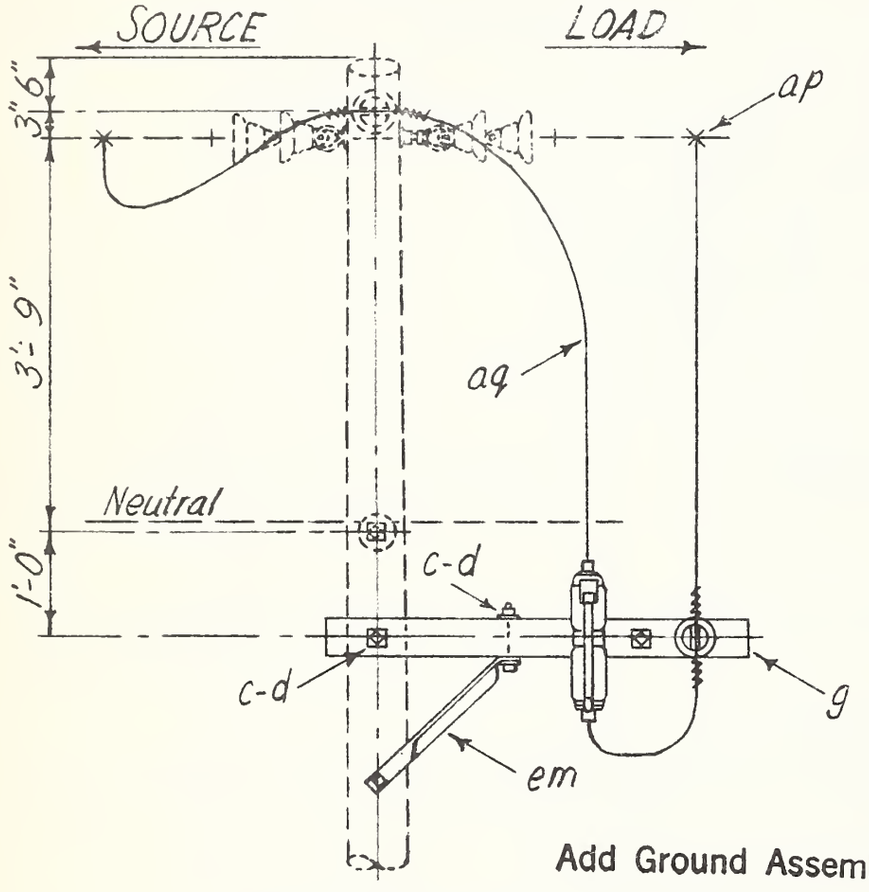
Scale: ½" = 1'-0"

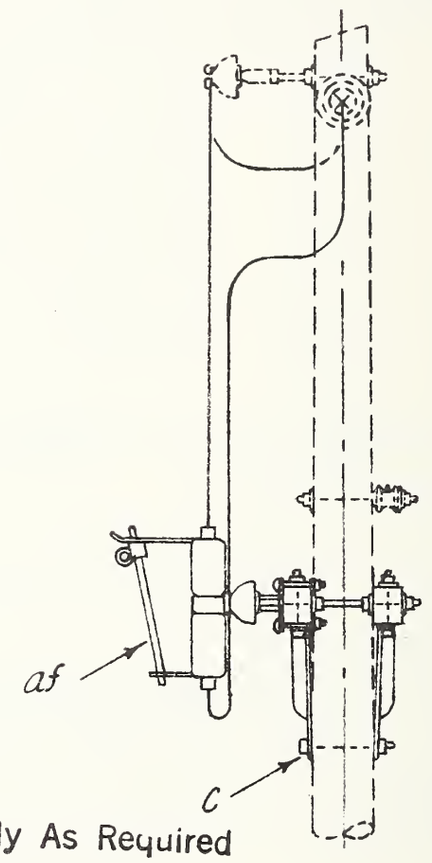
Date: June 1, 1948

M2-9



PLAN





Add Ground Assembly As Required

ELEVATION

ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	1	Insulator, pin type	af	1	Cutout, fuse, 1-shot (M3-1 only)
c	4	Bolt, machine, 5/8" x req'd. length	ap	2	Clamp, hot line, tap assembly
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	aq		Leads or jumpers as required
f	1	Pin, crossarm, steel, 5/8" x 10 3/4"	em	2	Brace, angle, special, 1 1/2" x 1 1/2" x 3/16
g	2	Crossarm, 3 1/2" x 4 1/2" x 4'-0"	ag	1	Cutout fuse, 3-shot (M3-2 only)
n	1	Bolt, double arming, 5/8" x req'd. lgth.			

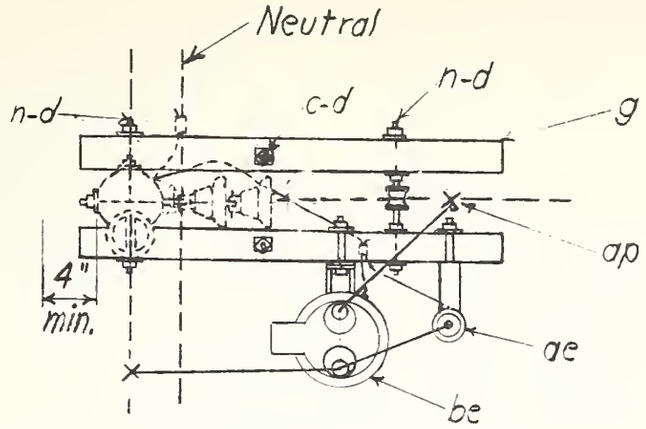
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
ONE SECTIONALIZING FUSE CUTOUT, ONE OR THREE SHOT

No.	REVISION	DATE:
1	Revised	9-55

Scale: 1/2" = 1'-0"

Date: Feb. 5, 1952

M3-1, M3-2

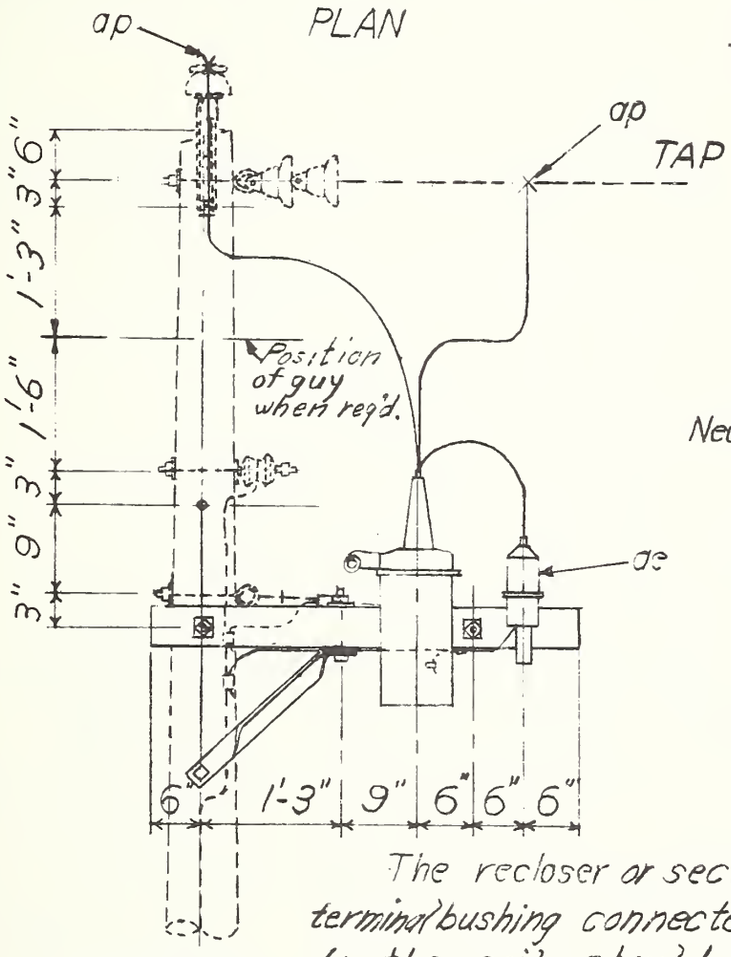


PLAN

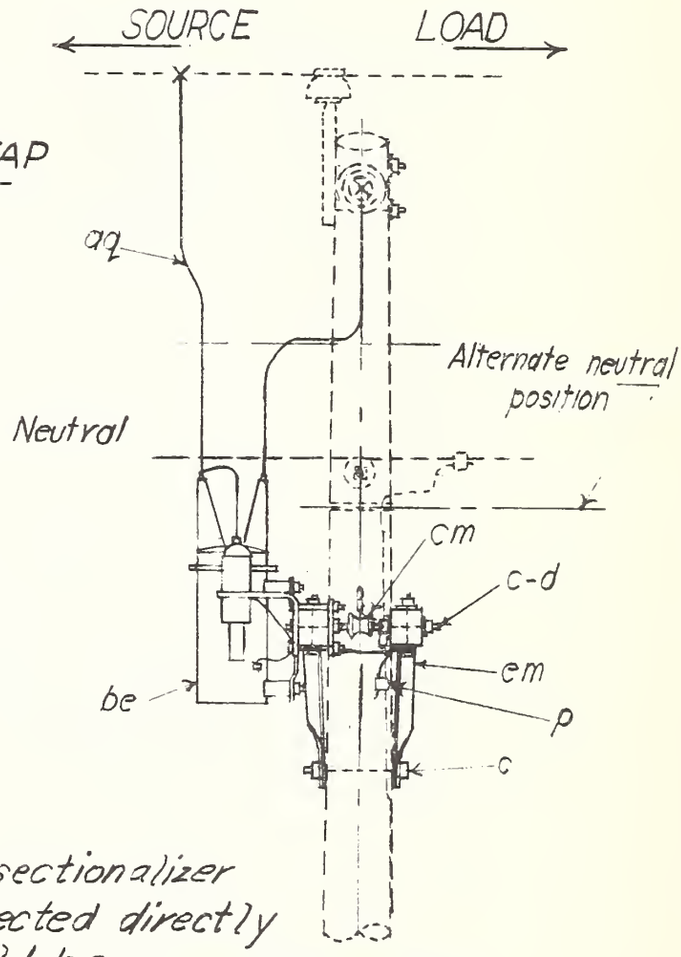
Note:

A metal bracket may be substituted for wood crossarms.

Add Ground Assembly As Required



ELEVATION



SIDE ELEVATION

The recloser or sectionalizer terminal bushing connected directly to the coil should be connected to the source.

ITEM	NO. REQ'D	MATERIAL
c	3	Bolt, machine, 5/8" x req'd. length
d	8	Washer, 2 1/4" x 2 1/4" x 3/16" 13/16" hole
g	2	Crossarm, 3 1/2" x 4 1/2" x 4'-0"
n	2	Bolt, double arming, 5/8" x req'd. lgth.
p		Connectors as required
ae	1	Arrester, lightning

ITEM	NO. REQ'D	MATERIAL
ap	2	Clamp, hot line tap assembly
aq		Jumpers and leads as req'd.
be	1	Recloser, oil circuit (M3-10T only)
cm	1	Insulator, spool
el	1	Sectionalizer (M3-5T only)
em	2	Brace, crossarm, 1 1/2" x 1 1/2" x 3/16" angle

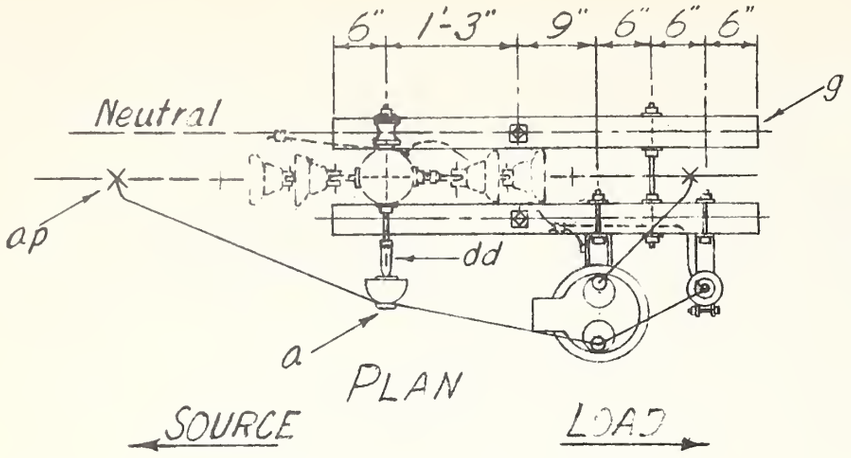
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
ONE SECTIONALIZER OR RECLOSER AT TAP

No.	REVISION	DATE
1	Revised	9-55

Scale: 1/2" = 1'-0"

Date: Feb. 12, 1952

M3-5T, M3-10T



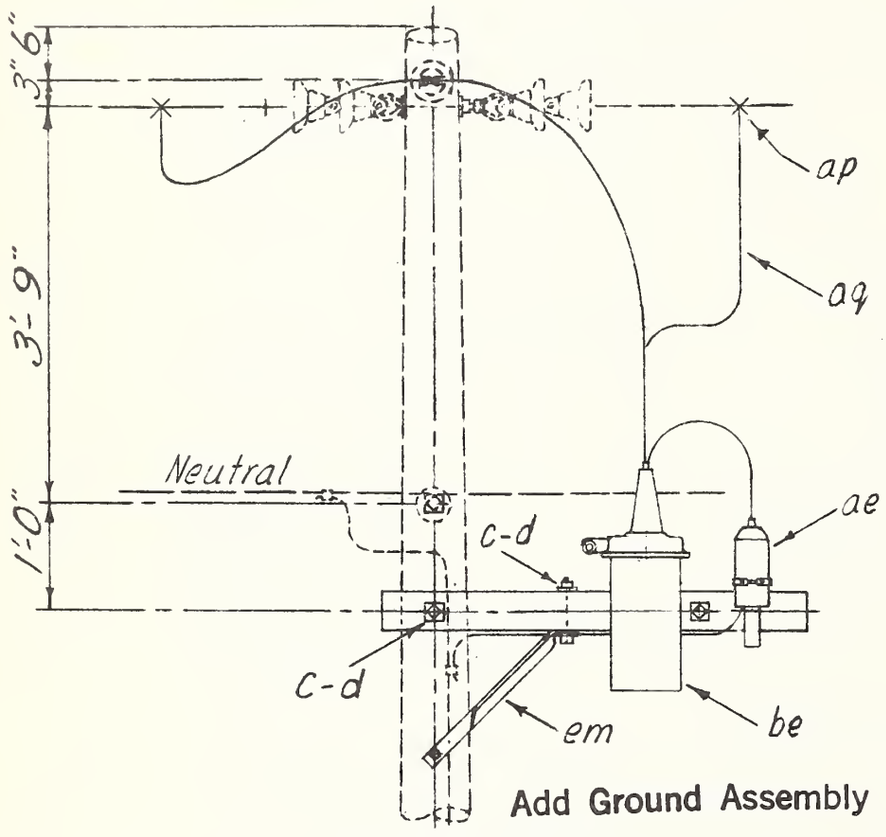
PLAN

SOURCE ← → LOAD

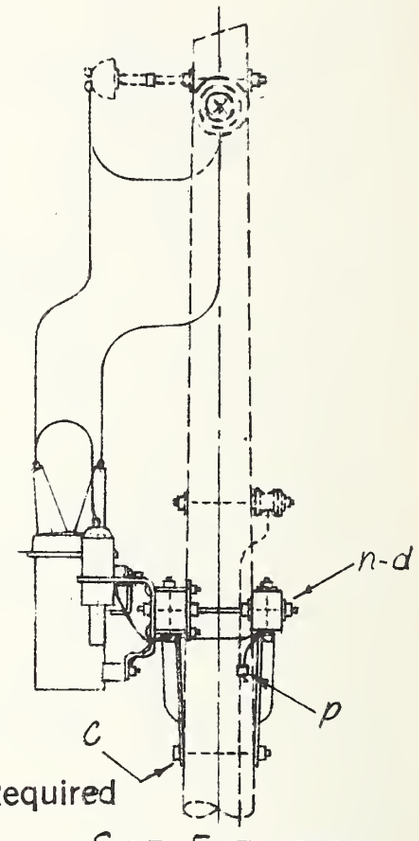
NOTE:

Where necessary to connect the source lead to the other terminal the recloser or sectionalizer should be mounted on the other crossarm and the neutral deadended.

A metal bracket may be substituted for wood crossarms.



ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	NO. REQ'D.	MATERIAL
c	4	Bolt, machine, 5/8" x req'd. length
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16 hole
g	2	Crossarm, 3 1/2" x 4 1/2" x 4'-0"
n	1	Bolt, double arming 5/8" x req'd. lgth.
p		Connectors, as required
ae	1	Lightning arrester
ap	2	Clamp, hot line, tap assembly

ITEM	NO. REQ'D.	MATERIAL
aq		Jumpers and leads as req'd.
be	1	Recloser, oil circuit (M3-7 only)
el	1	Sectionalizer (M3-40 only)
em	2	Brace, crossarm, angle, 1 1/2" x 1 1/2" x 3/16

7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
ONE SECTIONALIZER OR OIL CIRCUIT RECLOSER

NO.	REVISION	DATE:
1	Revised	9-55

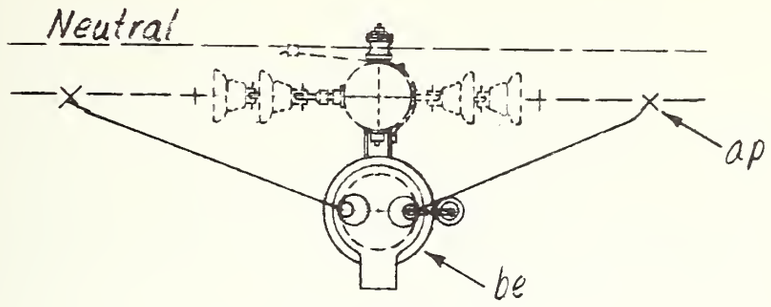
Scale: 1/2" = 1'-0"

Date: Feb. 12, 1952

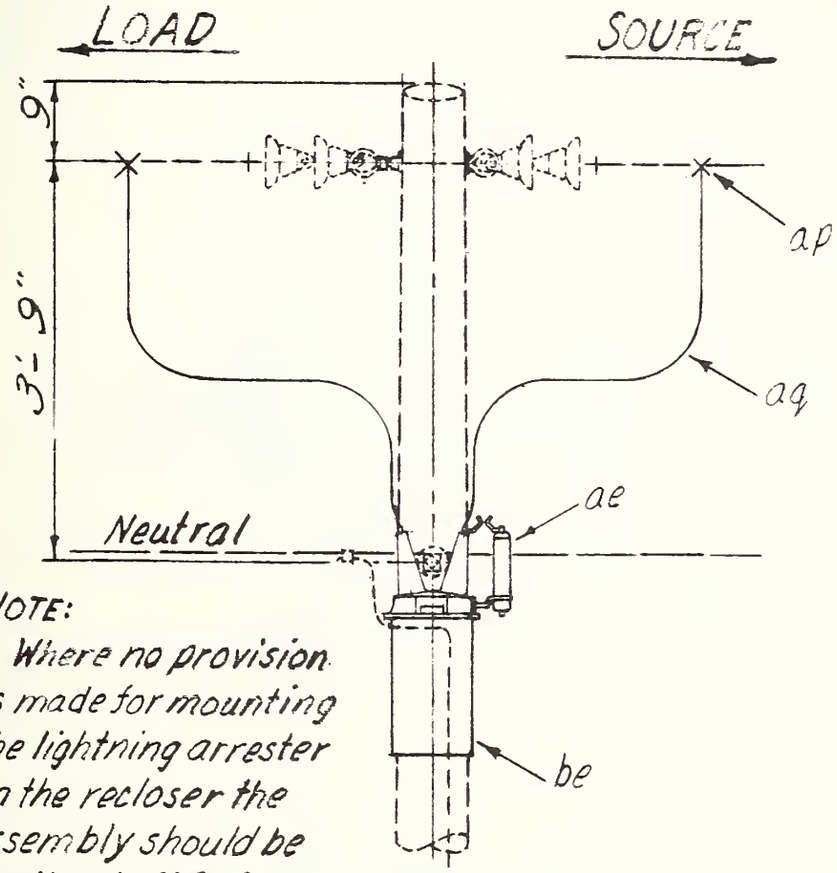
M3-7, M3-40

NOTE:

The terminal bushing connected directly to the coil should be connected to the source. Where necessary to provide for this connection the recloser may be mounted on the other side of the pole and the neutral deadended.



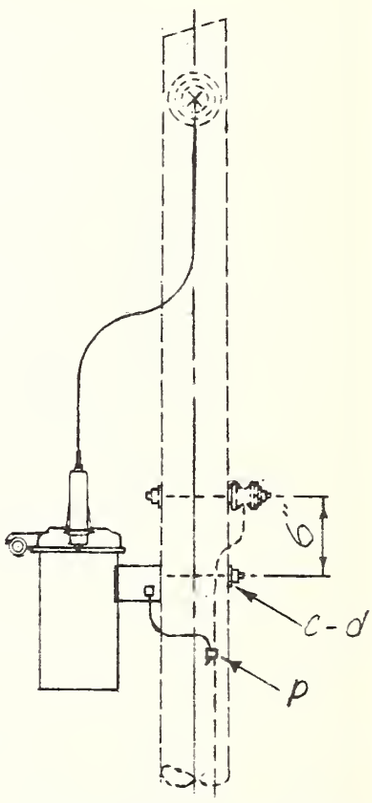
PLAN



NOTE:

Where no provision is made for mounting the lightning arrester on the recloser the assembly should be similar to M3-7.

ELEVATION



SIDE ELEVATION

Add Ground Assembly As Required

ITEM	NO. REQD.	MATERIAL		ITEM	NO. REQD.	MATERIAL	
c	1	Bolt, machine, 5/8" x req'd. length		ae	1	Lightning arrester	
d	1	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		bs	1	Bolt, single upset, insulated	
p		Connectors, as required		el	1	Sectionalizer (M3-41 only)	
ap	2	Clamp, hot line, tap assembly					
aq		Leads or jumpers, as req'd.					
be	1	Recloser, oil circuit (M3-10 only)					

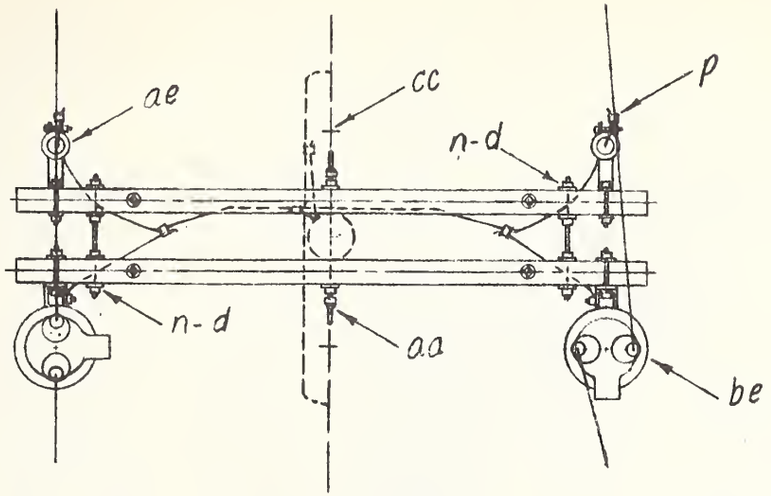
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED
ONE SECTIONALIZER OR OIL CIRCUIT RECLOSER

No.	REVISION	DATE:
1	Revised	9-55

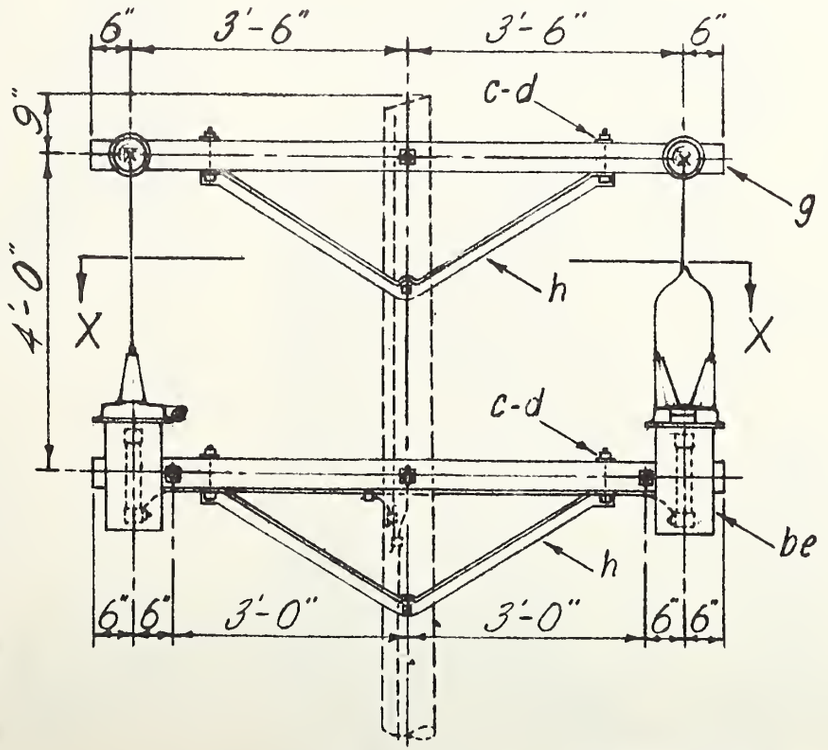
Scale: 1/2" = 1'-0"

Date: Feb. 12, 1952

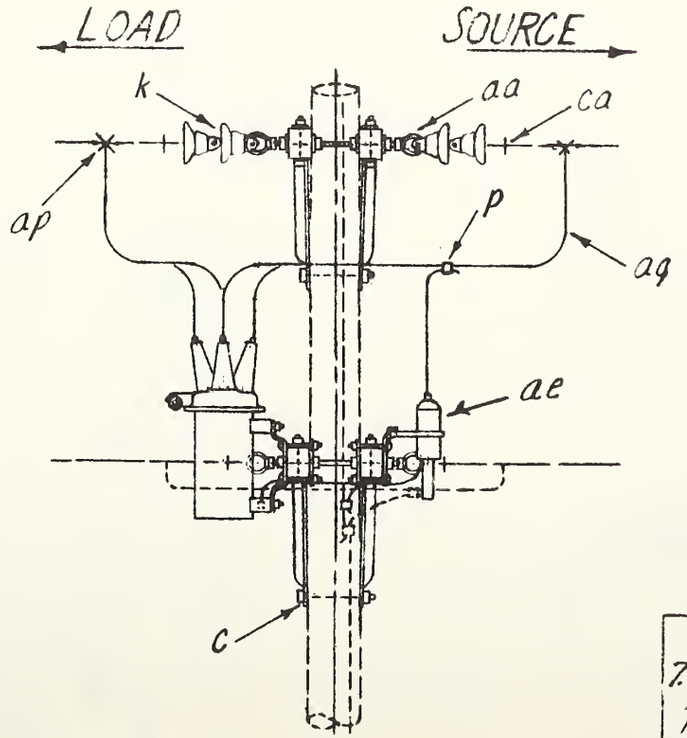
M3-10, M3-41



SECTION X-X



ELEVATION



SIDE ELEVATION

ITEM	NO. REQ'D	MATERIAL
c	8	Bolt, machine, ½" x req'd. length
c	3	Bolt, machine, 5/8" x req'd. lg'th.
d	8	Washer, Rd. 1 3/8" dia., 9/16" hole
d	20	Washer, 2 1/4" x 2 1/4" x 5/16", 13/16" hole
g	4	Crossarm, 3 1/2" x 4 1/2" x 8'-0"
h	4	Brace, 1 1/2" x 1 1/2" x 3/16"; 60" span
k	8	Insulator, suspension
n	6	Bolt, double arming, 5/8" x req'd. lg'th.
p		Connectors, as required
aa	6	Nut, eye, 3/8"
ap	4	Clamp, hot line, tap assembly
ae	2	Lightning arrester
ag		Jumpers and leads as req'd.
be	2	Recloser, oil circuit
ca	4	Deadend assembly, primary
cc	2	Deadend assembly, neutral

NOTE:

Where required to facilitate the connection of the source lead to the coil bushing, the reclosers should be rotated as required.

NO.	REVISION	DATE
1	Reissued	8-56

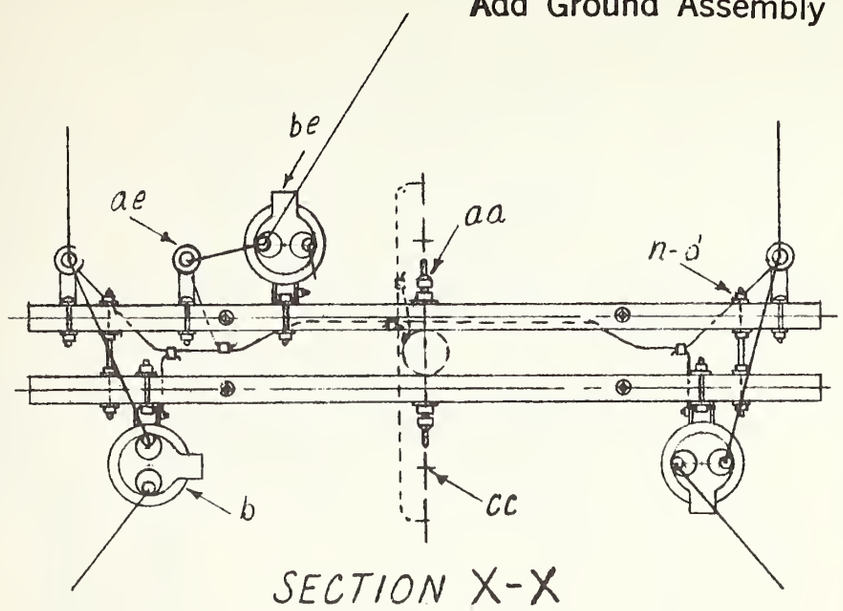
7.2/12.5KV. PRIMARY 2-PHASE WIRES AND NEUTRAL
TWO SECTIONALIZING OIL CIRCUIT RECLOSERS

Scale: 3/8" = 1'-0"

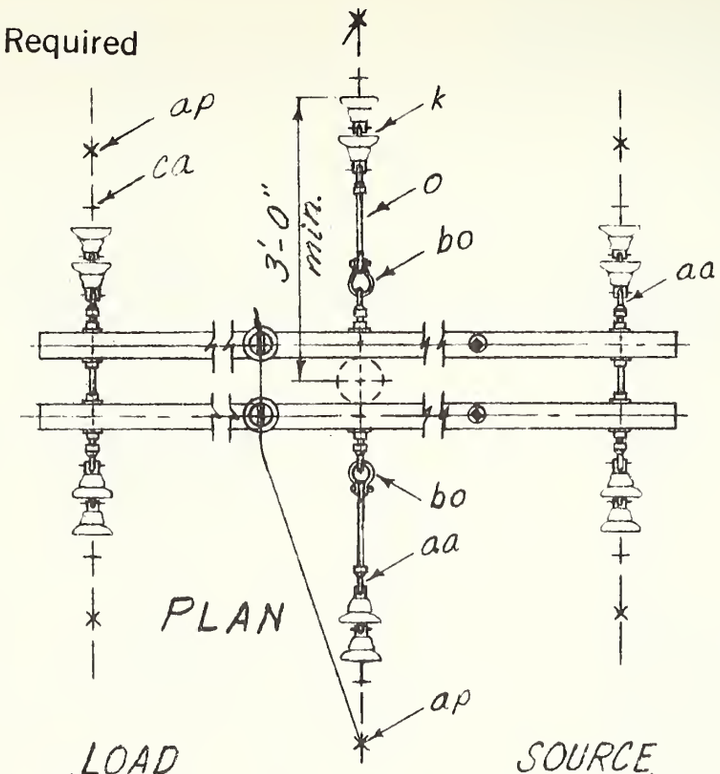
Date: Feb. 12, 52

M 3-11

Add Ground Assembly As Required

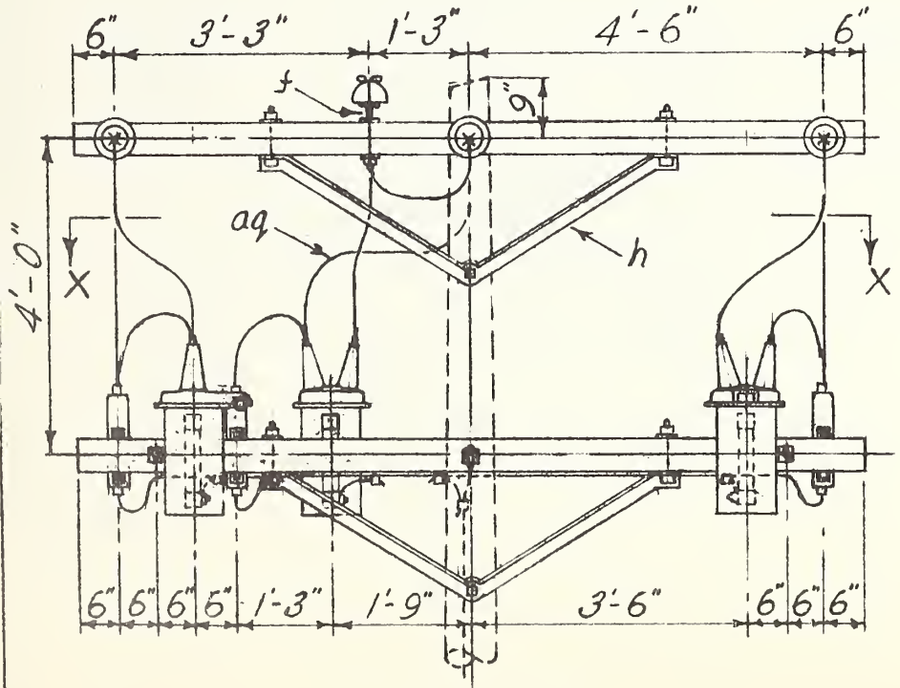


SECTION X-X

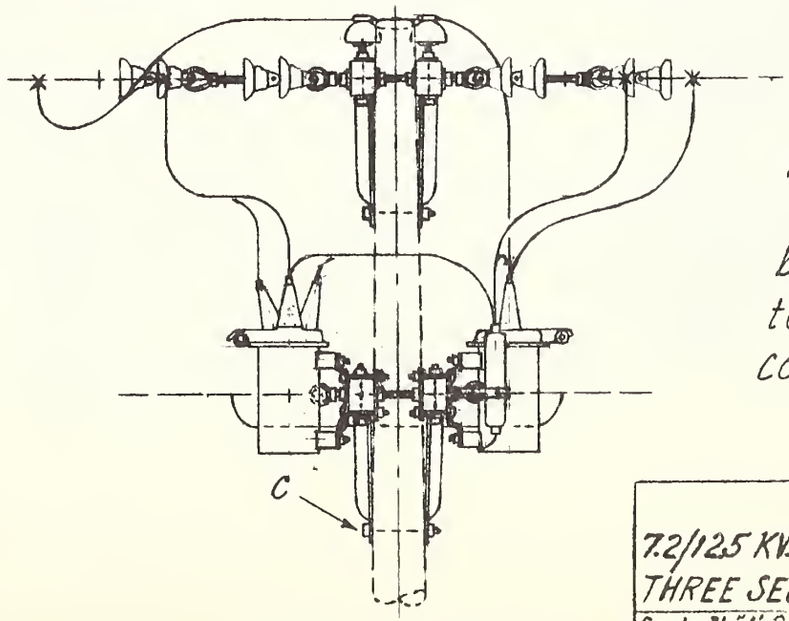


PLAN

ITEM	NO. REQR	MATERIAL
a	2	Insulator, pin type
c	2	Bolt, machine, 5/8" x req'd. lgth.
c	8	Bolt, machine, 1/2" x req'd. lgth.
d	8	Washer, Rd., 1-3/8" dia., 9/16" hole
d	20	Washer, 2 1/4" x 2 1/4" x 9/16", 13/16" hole
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"
g	4	Crossarm, 3 3/4" x 4 3/4" x 10'-0"
h	4	Brace, 1 1/2" x 1 1/2" x 3/16", 60° span
k	12	Insulator, suspension
n	6	Bolt, double arming, 5/8" x req'd. lgth.
p		Connectors, as required
o	2	Bolt, eye, 5/8" x req'd. length
aa	10	Nut, eye, 5/8"
ap	6	Clamp, hot line, tap assembly
aq		Jumpers or leads as req'd.
ae	3	Lightning arrester
be	3	Recloser, oil circuit
ca	6	Deadend, assembly, primary
cc	2	Deadend, assembly, neutral
bo	2	Shackle, anchor



ELEVATION



SIDE ELEVATION

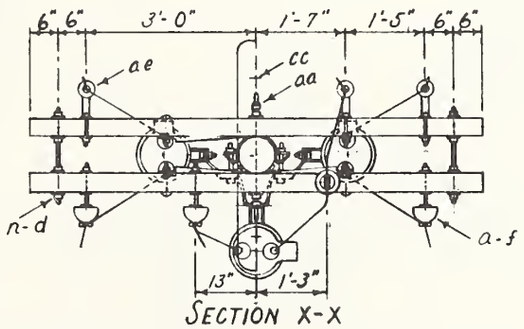
NOTE:
The recloser terminal bushing connected directly to the coil should be connected to the source.

7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
THREE SECTIONALIZING OIL CIRCUIT RECLOSERS

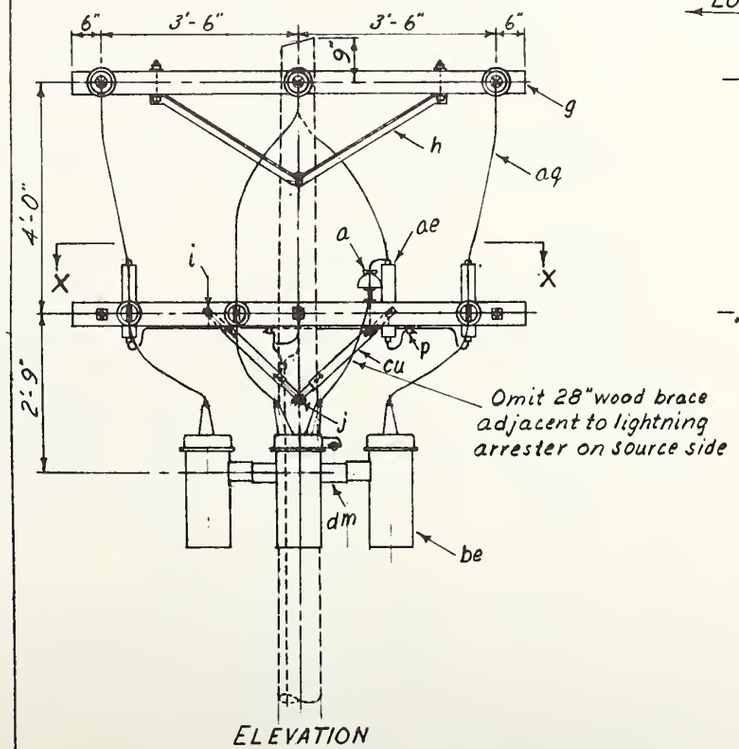
Scale: 3/8"-1'-0"

Date: Mar. 28-'35

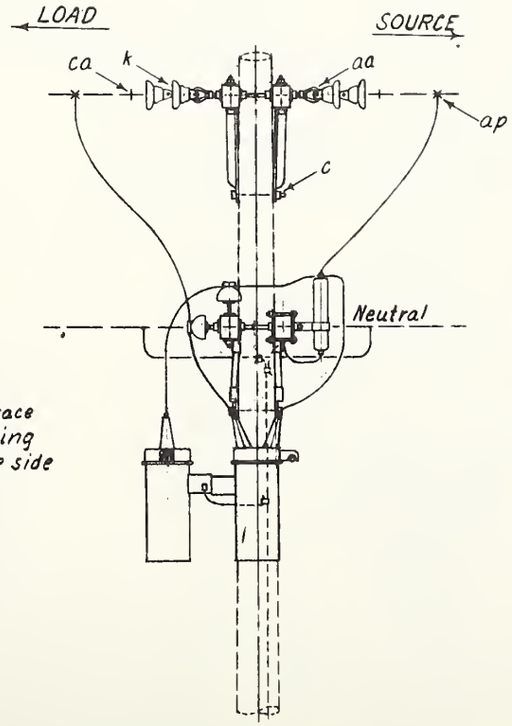
M3-12



SECTION X-X



ELEVATION



ITEM	NO. REQ'D.	MATERIAL
a	4	Insulator, pin type
c	1	Bolt, machine, 5/8" x req'd. lgth.
c	4	Bolt, machine, 1/2" x req'd. length
d	4	Washer, Rd., 1 3/8" dia., 9/16" hole
d	20	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"
g	4	Crossarm, 3 1/2" x 4 1/2" x 8'-0"
h	2	Brace, 1 1/2" x 1 1/2" x 5/16", 60° span
i	3	Bolt, carriage, 5/8" x 4 1/2"
j	2	Screw, lag, 1/2" x 4"
k	12	Insulator, suspension
n	6	Bolt, double arming, 5/8" x req'd lgth.
p		Connectors, as required
aa	8	Nut, eye, 5/8"
ae	3	Lightning arrester
ap	6	Clamp, hot line, tap assembly
aq		Jumpers or leads as req'd.
be	3	Recloser, oil circuit
ca	6	Deadend, assembly, primary
cc	2	Deadend, assembly, neutral
dm	1	Bracket, cluster type
cu	3	Brace, wood, 28"

NOTES:

The recloser terminal bushing connected directly to the coil should be connected to the source.

For V-Phase installations omit recloser and related items on center phase. Designate as assembly M3-11A

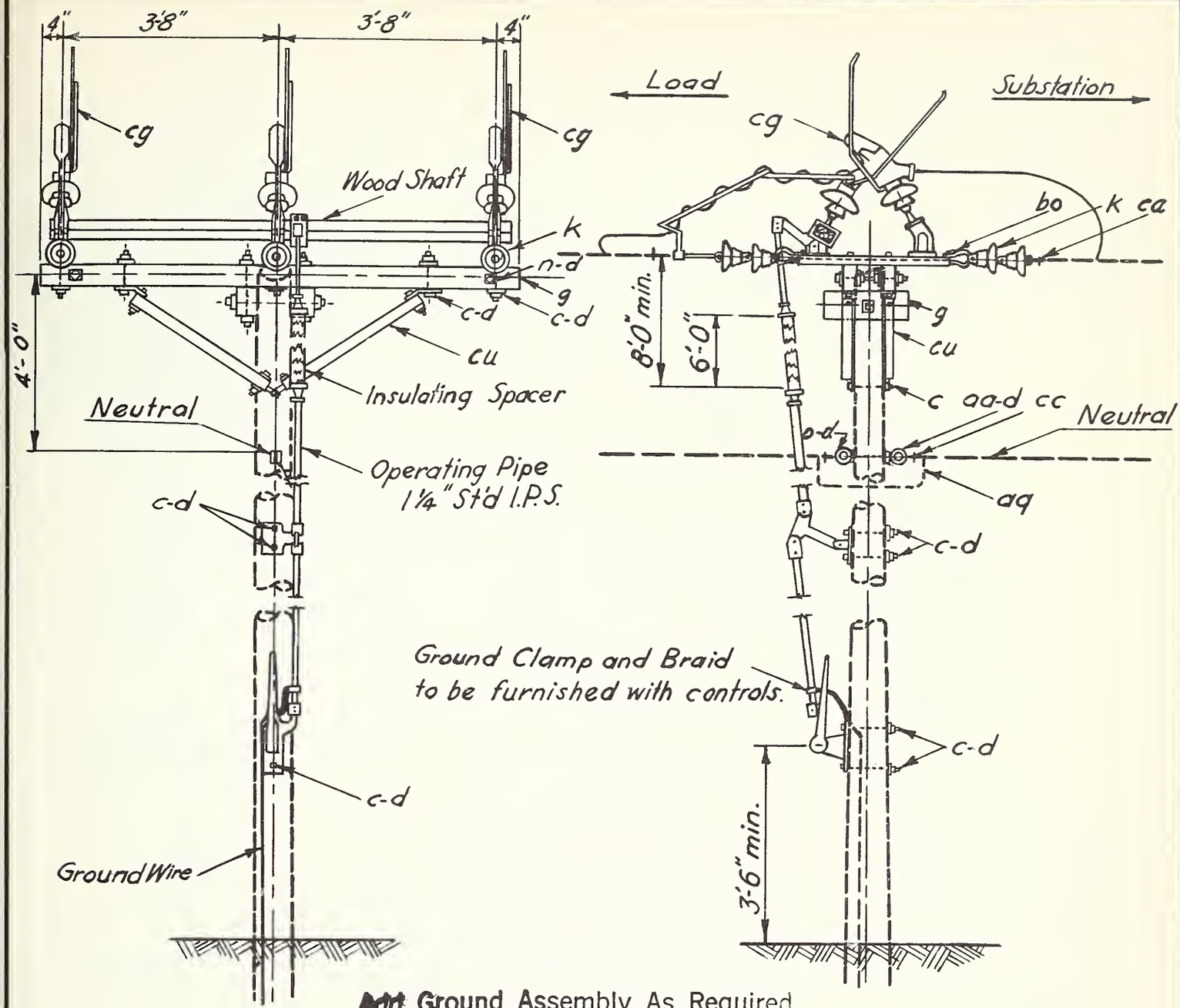
Add ground assembly as req'd.

7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
THREE SECTIONALIZING OIL CIRCUIT RECLOSERS
POLE MOUNTED WITH CLUSTER TYPE BRACKET

Scale: 1/2" = 1'-0"

Date: Oct. 27, 1955

M3-12A



Add Ground Assembly As Required

NOTES:

Operating handle to be provided with means of locking (Padlock) in open and closed position.

Ground operating-handle as shown in drawing above to ground rod.

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
c	4	Bolt, machine, ½"×req'd. length		aa	1	Nut, eye 5/8"	
c	16	Bolt, machine, 5/8"×req'd. length		cg	1	Switch, airbreak, 3 pole unit, 15 KV.	
d	30	Washer, 2¼"×2¼"×3/16", 13/16" hole				with operating mechanism.	
d	4	Washer, 2"×2"×⅛", 9/16" hole		bo	6	Shackle, anchor	
cu	4	Crossarm brace, wood, 60" span		ca	6	Dead end assembly, Primary	
k	12	Insulator, suspension		cc	2	Dead end assembly, Neutral	
n	2	Bolt, double arming, 5/8"×req'd. length		g	2	Crossarm, 3½"×4½"×8'-0"	
p		Connectors as req'd.		aq		Jumpers	
o	1	Bolt, eye, 5/8"×req'd length					
g	2	Crossarm, bracket 3½"×4½"×1'-6"					

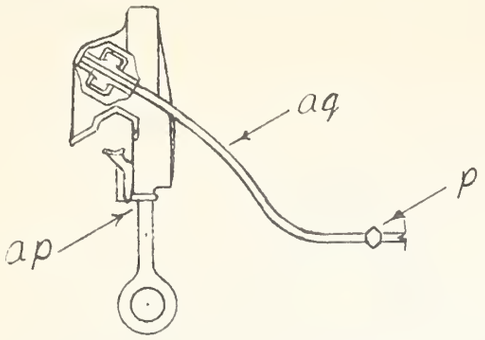
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR SECTIONALIZING AIR BREAK SWITCH

Scale: 3/16"=1'-0"

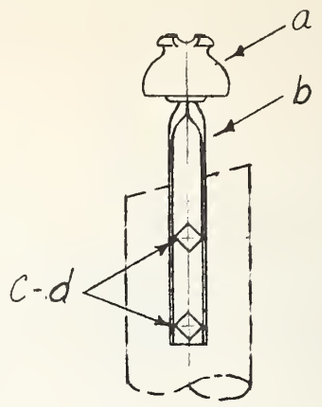
Date: Sept. 5, 1941

M3-15

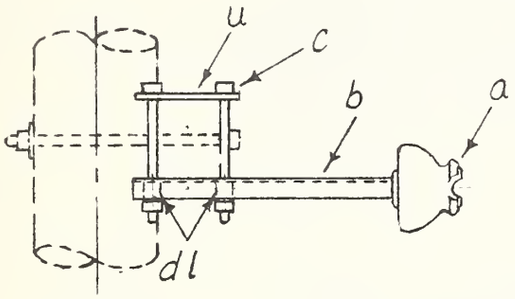
NO.	REVISION	DATE:
1	Reissued	8-56



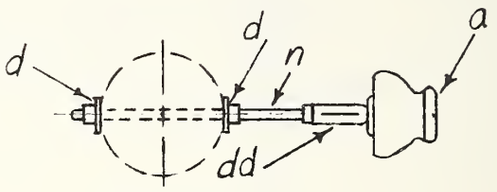
M5-1



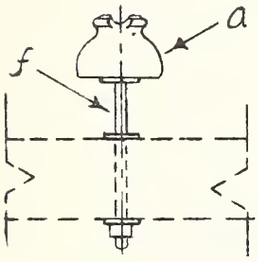
M5-2



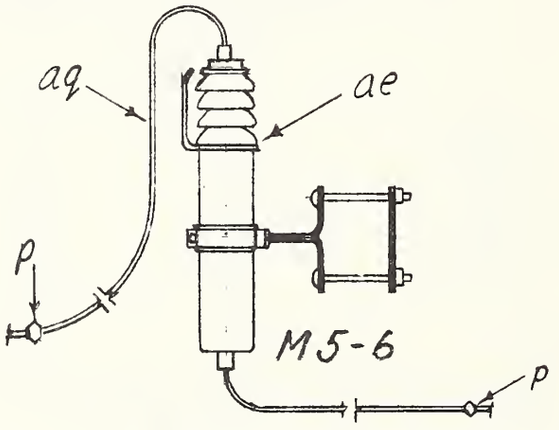
M5-3



M5-4



M5-5



M5-6

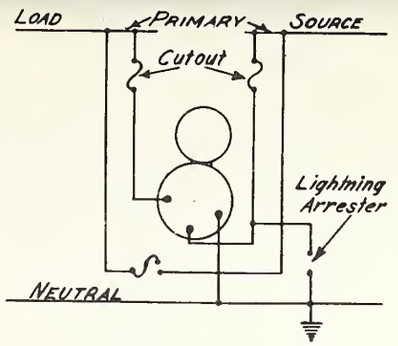
ITEM	MATERIAL	M5-1	M5-2	M5-3	M5-4	M5-5	M5-6
a	Insulator, pin type		1	1	1	1	
b	Pin, pole top, 15"		1	1			
c	Bolt, machine, 5/8" x req'd. length		2	2			
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		2		2		
f	Pin, crossarm, steel, 5/8" x 10 3/4"					1	
n	Bolt, double arming, 5/8" x req'd. lg'th.				1		
p	Connector	1					2
u	Clamp, guy, 3 bolt type			1/2			
ae	Lightning arrester						1
ap	Clamp, hot line,	1					
aq	Jumper	1					2
dd	Adapter, insulator				1		
dl	Pipe spacer, pole pin			2			

T.2/12.5 KV.
MISCELLANEOUS PRIMARY ASSEMBLIES

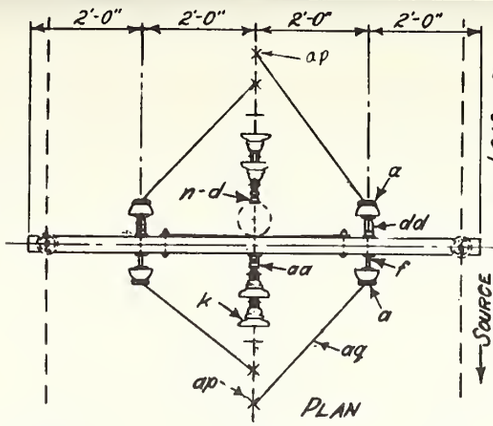
Scale: N.T.S.

Date: July 12, 1956

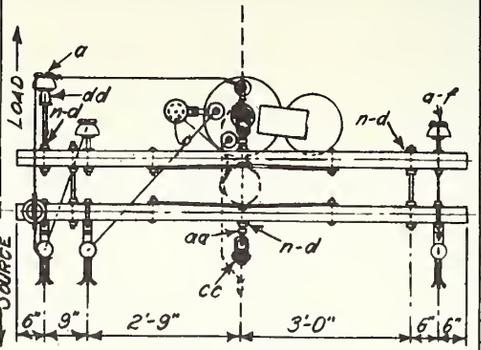
M5-1 TO M5-6



WIRING DIAGRAM



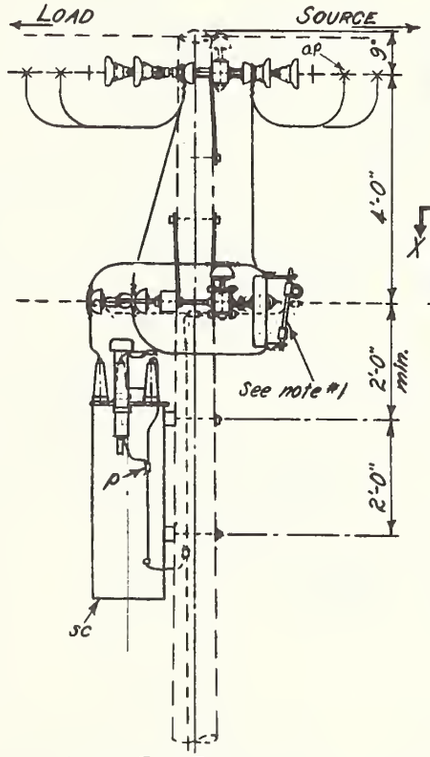
PLAN



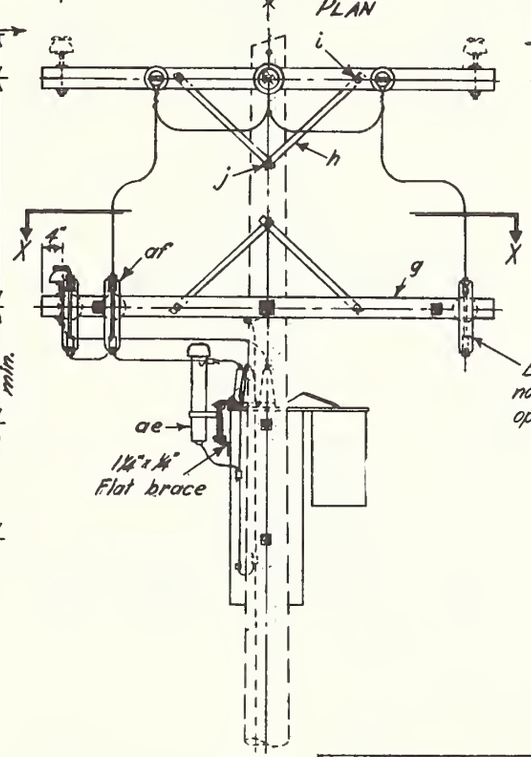
SECTION "X-X"

ITEM	No. Reqd.	MATERIAL	
a	8	Insulator, pin type	
c	2	Bolt, machine, ⅝" x req'd. length	
d	19	Washer, 2¼" x 2¼" x 5/16", 13/16" hole	
f	5	Pin, crossarm, steel, ⅝" x 10 3/8"	
g	3	Crossarm, 3½" x 4½" x 8'-0"	
h	7	Brace, 1¼" x 1¼" x 28"	
i	6	Bolt, carriage, ⅜" x 4½"	
j	3	Screw, lag, ½" x 4"	
k	4	Insulator, suspension	
n	5	Bolt, double arming, ⅝" x req'd length	
p		Connectors, as req'd.	
aa	4	Nut, eye, ⅝"	
ae	1	Lightning arrester	
af	3	Cutout, fuse, single shot	
ap	4	Clamp, hot line, tap assembly	
aq		Leads, as req'd.	
ca	2	Deadend assembly, primary	
cc	2	Deadend assembly, neutral	
dd	3	Adapter, insulator	
sc	1	Regulator, step type	

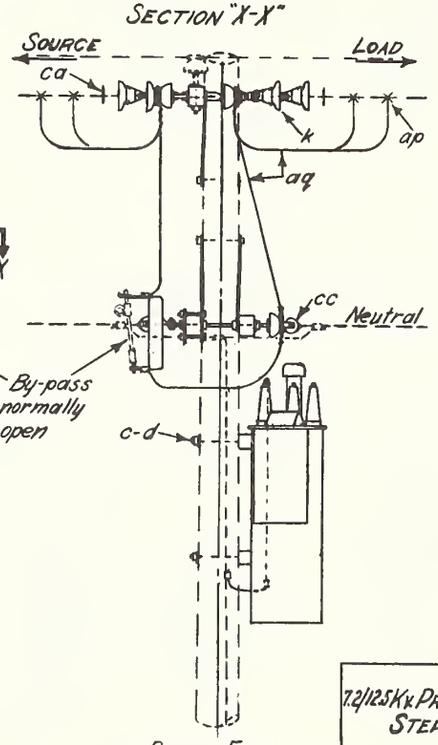
Notes: 1. Cutouts should be provided with switch blades or 50 ampere fuses.
2. Regulators above 1500 pounds should be mounted on two pole structures.
3. Add ground assembly as required.



LEFT END ELEVATION



ELEVATION



RIGHT END ELEVATION

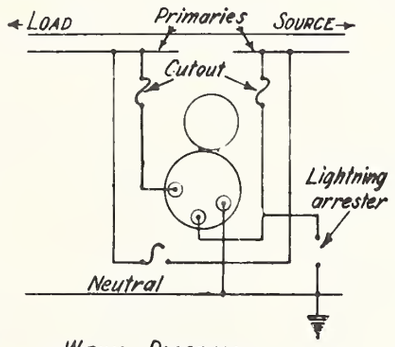
No.	Revision	Date
1	Reissued	8-56

7.2/12.5 Kv. PRIMARY, 1-PHASE, 2-WIRE, NEUTRAL GROUNDED
STEP-VOLTAGE REGULATOR ASSEMBLY
POLE MOUNTED

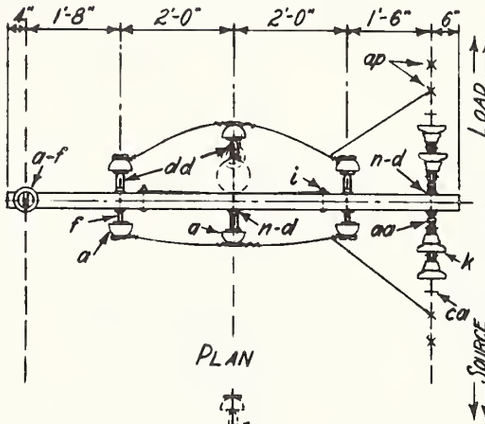
Scale: 1½" = 1'-0"

Date: Sept. 18, 1957

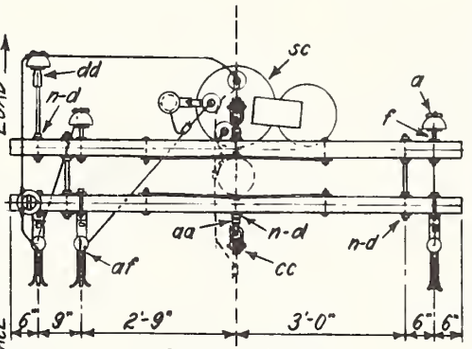
M 7-4



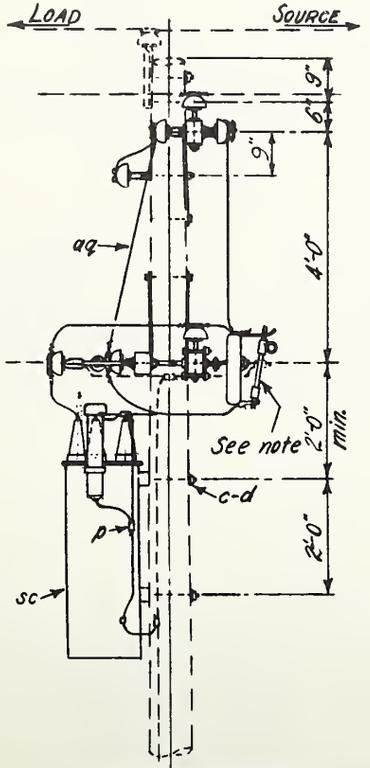
WIRING DIAGRAM



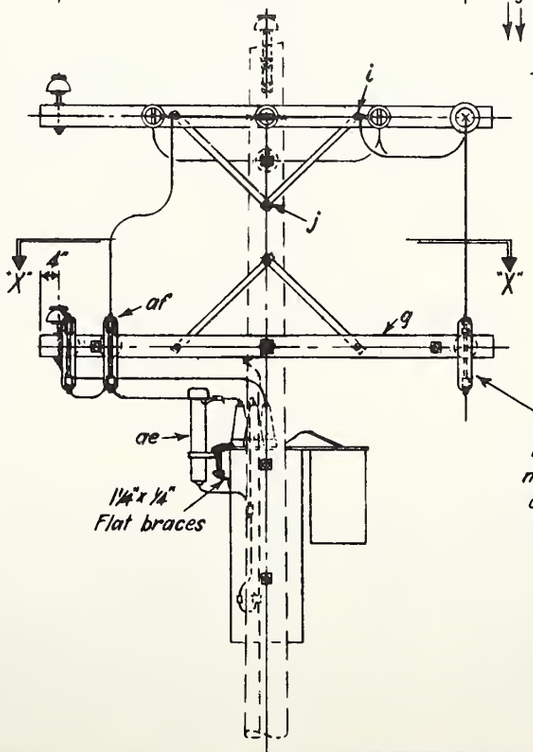
PLAN



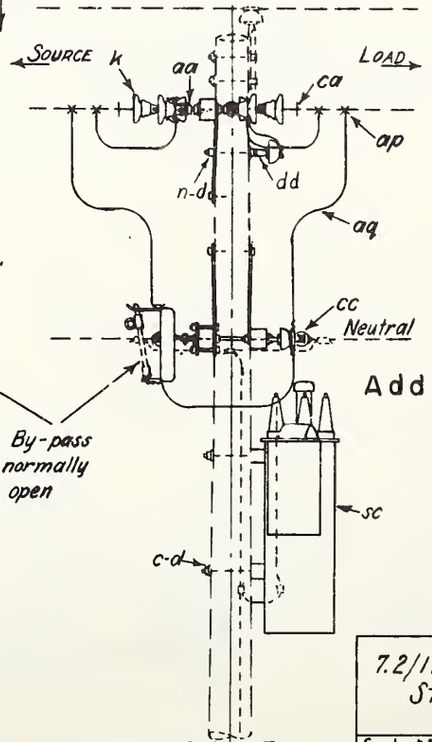
SECTION "X-X"



LEFT END ELEVATION



ELEVATION



RIGHT END ELEVATION

By-pass normally open

Add Ground Assembly As Req'd.

ITEM	No. Req.	MATERIAL
a	11	Insulator, pin type
c	2	Bolt, machine, ⅝" x req'd. length
d	20	Washer, 2¼" x 2¼" x 7/16" x 13/16" hole
f	6	Pin, crossarm, steel, ⅝" x 10¾"
g	3	Crossarm, 3½" x 4½" x 8'-0"
h	7	Brace, 1¼" x ¼" x 28"
l	6	Bolt, carriage, ⅜" x 4½"
j	3	Screw, lag, ½" x 4"
k	4	Insulator, suspension
n	6	Bolt, double arming, ⅝" x req'd. 1'1½
p		Connectors, as req'd.
aa	4	Nut, eye, ⅝"
ae	1	Lightning arrester
af	3	Cutout, fuse, single shot
ap	4	Clamp, hot line, tap assembly
aq		Jumpers and leads, as req'd.
ca	2	Deadend assembly, primary
cc	2	Deadend assembly, neutral
dd	5	Adapter, insulator
sc	1	Regulator, step type

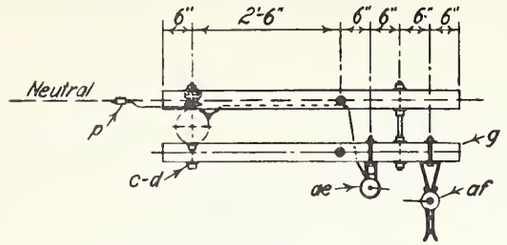
Note: Cutouts should be provided with switch blades.

No	Revision	Date
1	Reissued	8-56

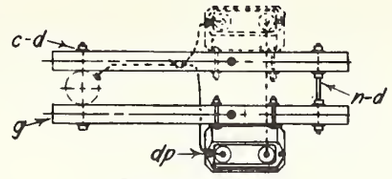
7.2/12.5 KV. PRIMARY, 3-PHASE, 4-WIRE STAR
STEP-VOLTAGE REGULATOR ASSEMBLY
POLE MOUNTED

Scale: ½"=1'-0" (ON OUTSIDE PHASE) Date: Mar. 28, 1950

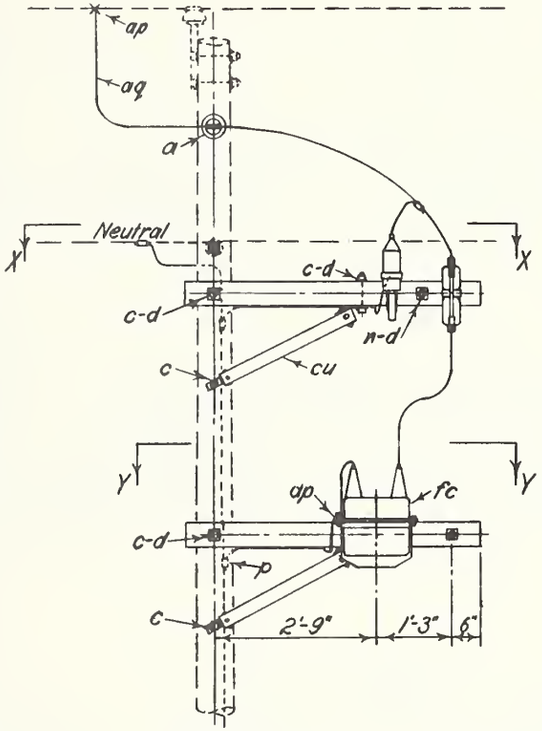
M 7-5



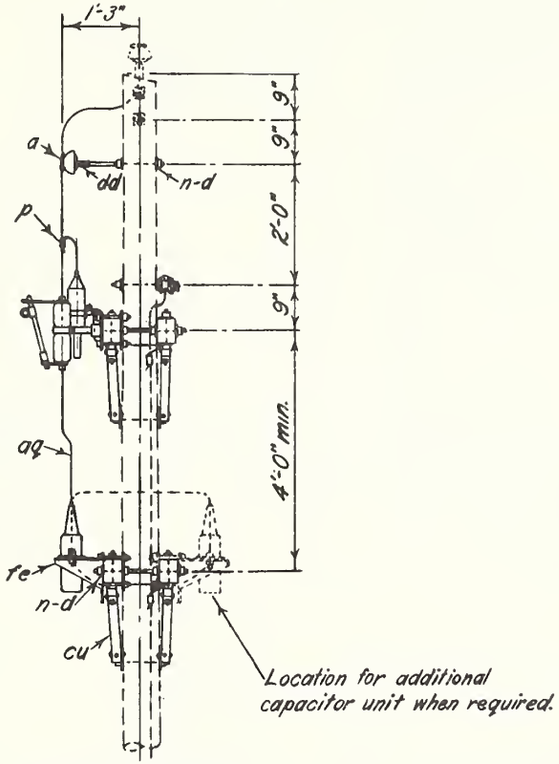
SECTION X-X



SECTION Y-Y



ELEVATION



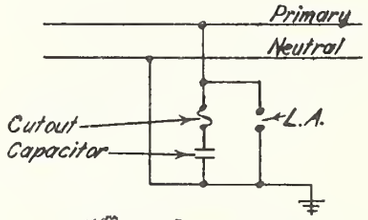
SIDE ELEVATION

Add Ground Assembly As Required

ITEM	No. Req'd.	MATERIAL	
a	1	Insulator, pin type	
c	4	Bolt, machine, ⅝" x req'd. length	
c	4	Bolt, machine, ½" x req'd. length	
d	14	Washer, 2¼" x 2¼" x 7/16", 7/16" hole	
d	4	Washer, round, 1⅜" dia., 9/16" hole	
g	4	Crossarm, 3¼" x 4¾" x 5'-0"	
cu	4	Brace, crossarm, wood	
n	3	Bolt, double arming, ⅝" x req'd. length	
p		Connectors, as req'd.	
ae	1	Lightning arrester	
af	1	Cutout, fuse, single shot, 15 K.V.	
ai	1	Rod, ground, ⅝" min. dia.	
aj	1	Clamp, ground rod	
al		Staples, 7/16" x 1½" x #9, as req'd.	
ap	1	Clamp, hot line, tap assembly	
aq		Leads, #6 S.D. or equiv., as req'd.	
dd	1	Adapter, insulator	
dp		Clamp, ground wire	*
fc		Capacitor, _____ K.V.A.	* †
fe		Hanger, capacitor, single unit	*

*Specify number required.
†Specify K.V.A. required.

Note:
Not more than 30 K.V.A. should be connected to one fuse cutout.



WIRING DIAGRAM

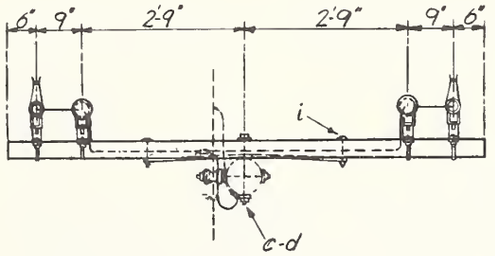
7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE NEUTRAL GROUNDED
, SINGLE PHASE CAPACITOR ASSEMBLY

Scale: ½" = 1'0"

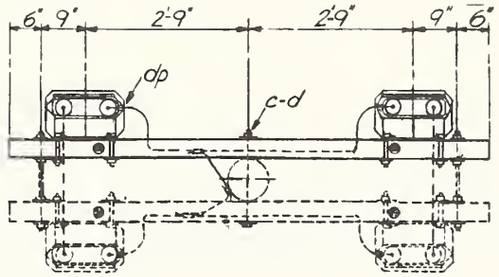
Date: June 14, 1949

M 9-1

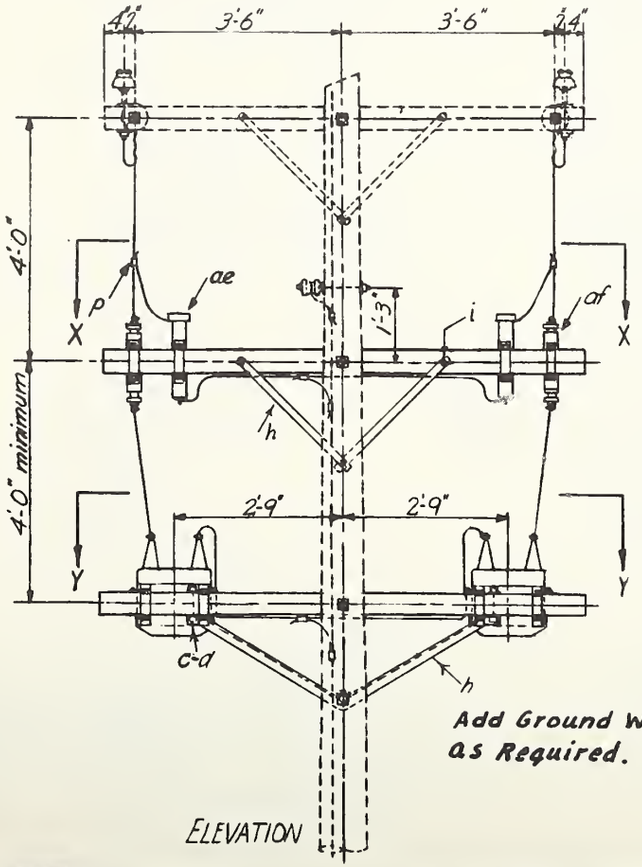
No.	REVISION	DATE
1	Reissued	8-56



SECTION X-X

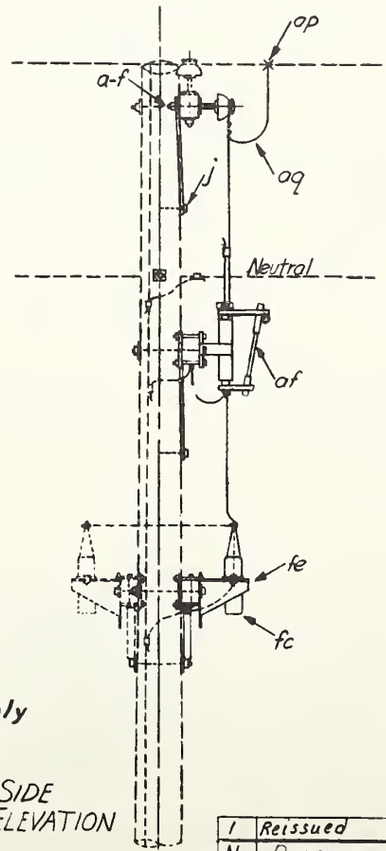


SECTION Y-Y



ELEVATION

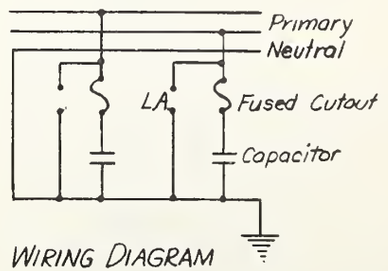
Add Ground Wire Assembly as Required.



SIDE ELEVATION

ITEM	NO. REQ'D	MATERIAL	
a	2	Insulator, pin type	
c	3	Bolt, machine, 5/8" x req'd. length	
c	2	Bolt, machine, 1/2" x req'd. length	
d	5	Washer, 2 1/4" x 2 1/4" x 3/16" x 13/16" hole	
d	2	Washer, round, 1 1/8" dia., 9/16" hole	
f	2	Pin, crossarm, steel, 5/8" x 10 1/4"	
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0" lg.	
h	1	Brace, angle, 1 1/2" x 1 1/2" x 3/16" x 60° span	
h	2	Brace, Flat, 1 1/4" x 1/4" x 28"	
i	2	Bolt, carriage, 3/8" x 4 1/2"	
j	1	Screw, lag, 1/2" x 4"	
p		Connectors, as req'd.	
ae	2	Lightning Arrester	
af	2	Cutout, fuse, single shot, 15 KV.	
ap	2	Clamp, hot line, tap assembly	
			*
oq		Leads, #6 S.D. Copper or equiv.	
fc		Capacitor, _____ KVA.	* †
fe		Hanger, capacitor, single unit	*

* Specify number required.
† Specify KVA required.
Note:
Not more than 30 K.V.A. should be connected to one fuse cutout.



WIRING DIAGRAM

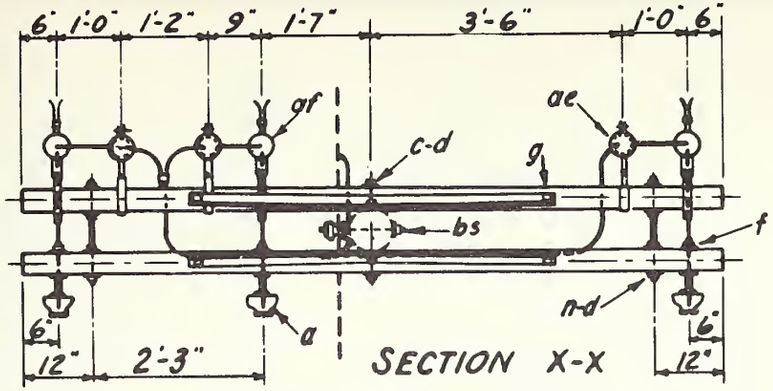
7.2/12.5 KV. PRIMARY TWO PHASE WIRES AND NEUTRAL V-PHASE CAPACITOR ASSEMBLY

No.	Revisions	Date:
1	Reissued	B-56

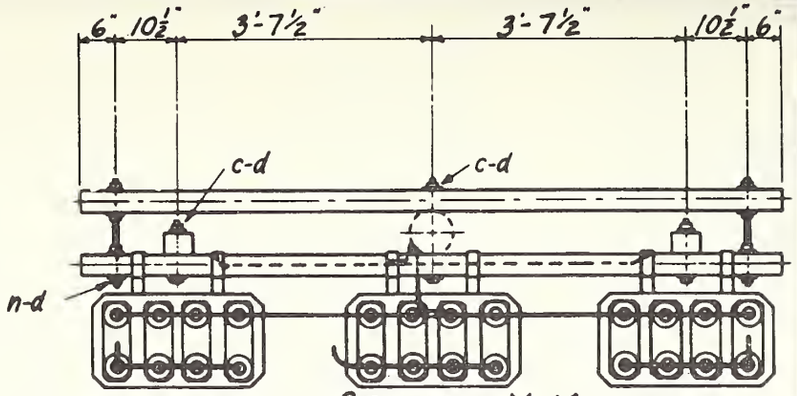
Scale: 1/2"=1'-0"

Date: June 14, 1949

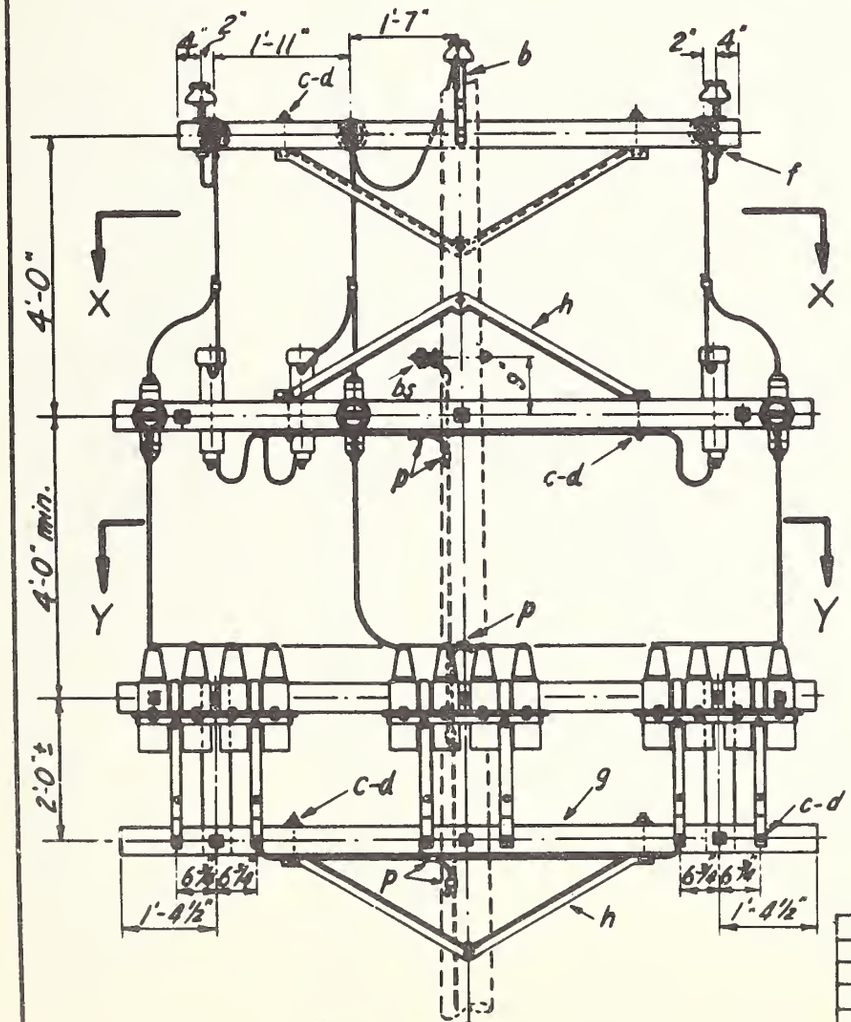
M 9-2



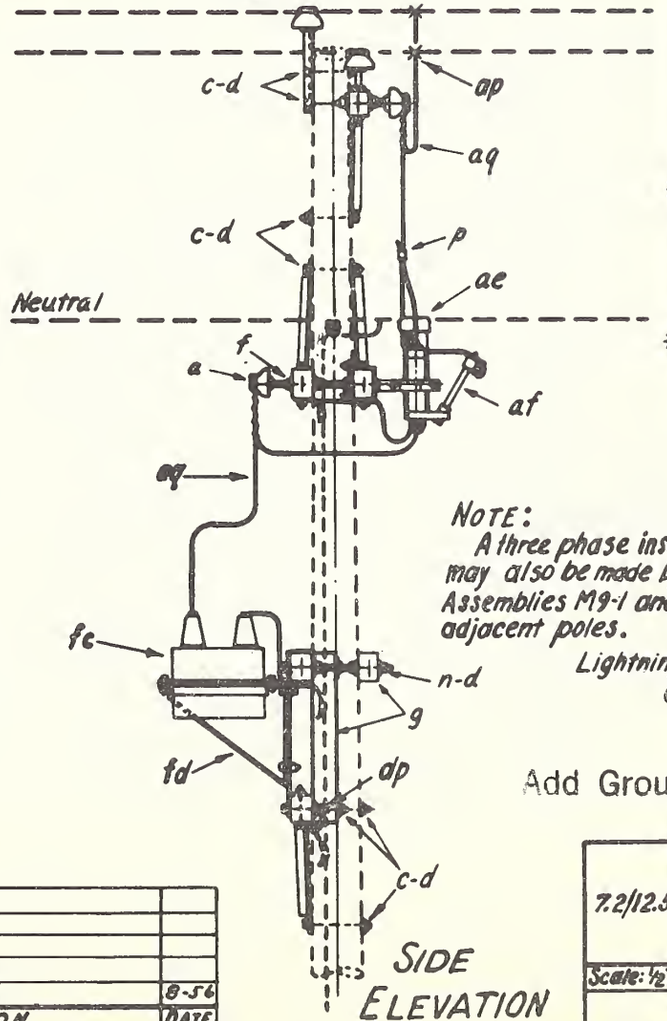
SECTION X-X



SECTION Y-Y



FRONT ELEVATION

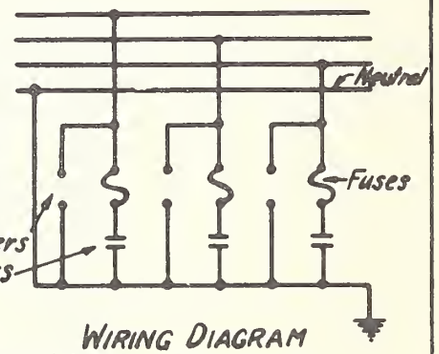


SIDE ELEVATION

ITEM	No. Req'd	MATERIAL
a	9	Insulator, pin
b	1	Pin, pole top, 15"
c	12	Bolt, machine, 5/8" x req'd. length
c	14	Bolt, machine, 1/2" x req'd. length
d	35	Washer, 2¼" x 2¼" x 3/16", 13/16" hole
d	14	Washer, rd. 1⅜" dia, 9/16" hole
f	8	Pin, crossarm, steel ⅝" x 10¾"
g	5	Crossarm, 3¼" x 4¼" x 10'-0" long
g	1	Crossarm, 3½" x 4½" x 8'-0" long
g	2	Crossarm, 3½" x 4½" x 2'-6" ±
h	4	Brace, angle 1½" x 1½" x 3/16", 60° spar
n	4	Bolt, double arming, ⅝" x req'd. length
p		Connectors, as req'd.
ae	3	Lightning Arrester
af	3	Cutout, fuse, single shot
al	1	Rod, ground
aj	1	Clamp, ground rod
al		Staples, 9/16" x 1½" x #9, as req'd.
ap	3	Clamp, hot line, tap assembly
aq		Leads, as req'd.
dp	3	Clamp, ground wire
* fc		Capacitor..... KVA
fd	3	Hanger, four unit, capacitor
bs	1	Bolt, single upset, insulated

* Specify number and Kva required

NOTE:
A three phase installation may also be made by using Assemblies M9-1 and M9-2 on adjacent poles.



WIRING DIAGRAM

Add Ground Assembly As Required

No.	REVISION	DATE
1	Reissued	8-56

7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR
THREE PHASE CAPACITOR ASSEMBLY

Scale: ½"=1'-0"

Date: Aug. 31948

M9-3

TOLERANCES - SIZES OF HOLES

		Nominal	Go	No Go
(A)	For Wood Pins	1 7/32"	1 1/2"	1 9/16"
	For Steel Pins	1 1/16"	5/8"	3/4"
(B)		7/16"	3/8"	1/2"
(C)		11/16"	5/8"	3/4"
(D)		9/16"	1/2"	5/8"

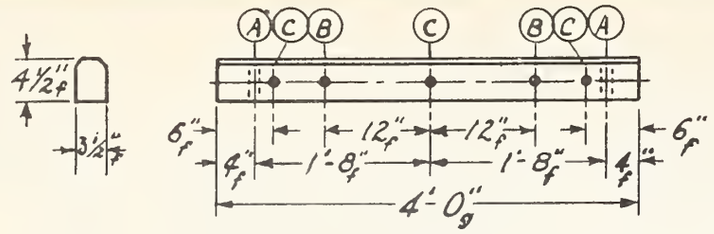


FIG. 1

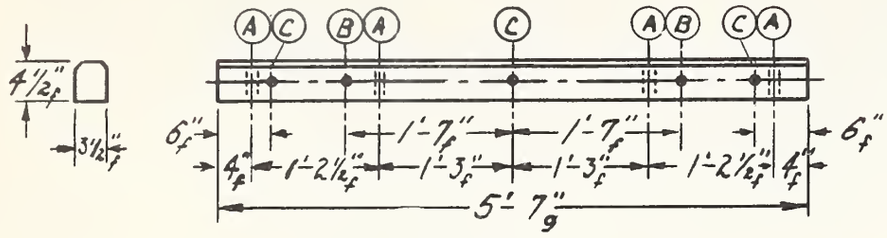
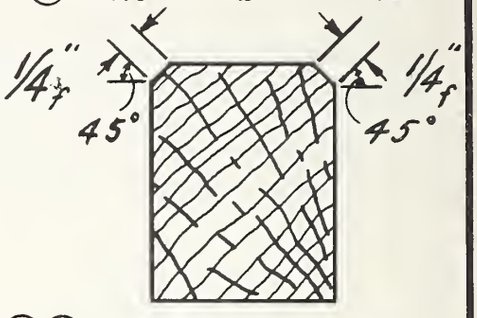


FIG. 2



TYPICAL ENLARGED SECTION OF CROSSARM

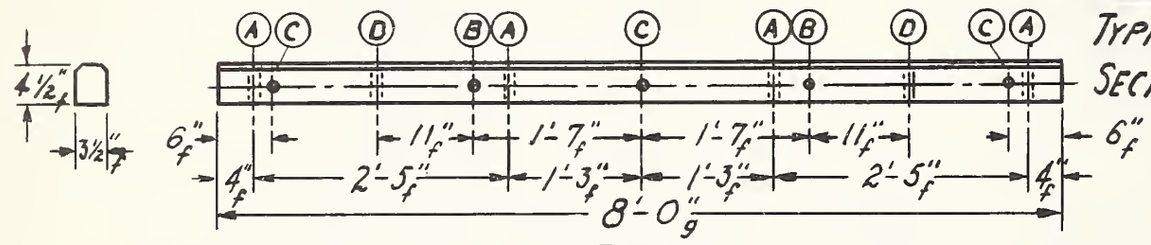


FIG. 3

f ---- 1/8" ±
g ---- 1/4" ±

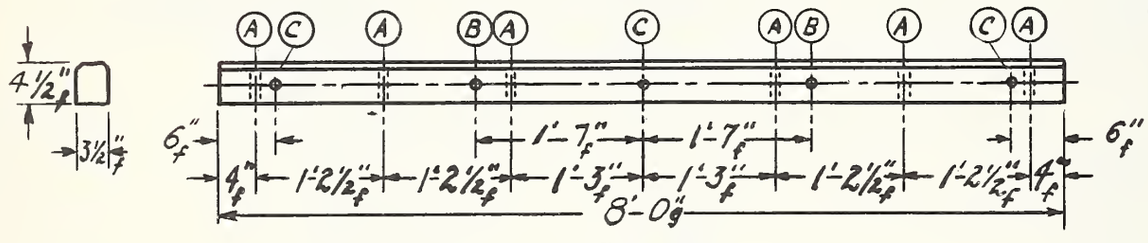


FIG. 4

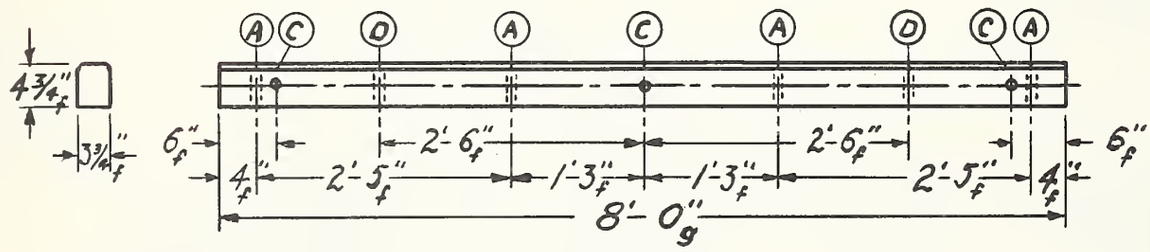


FIG. 5

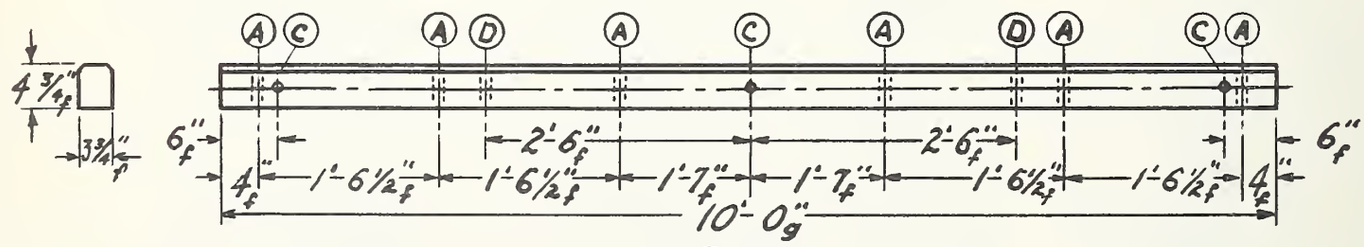


FIG. 6

Notes:

1. Drilling shall be for steel pins unless otherwise specified.
2. Eight foot crossarms may be drilled for 42" span angle braces, if so specified.

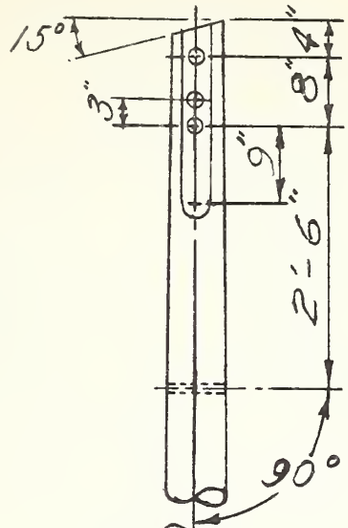
No.	Revision	Date
1	Reissued	8-56

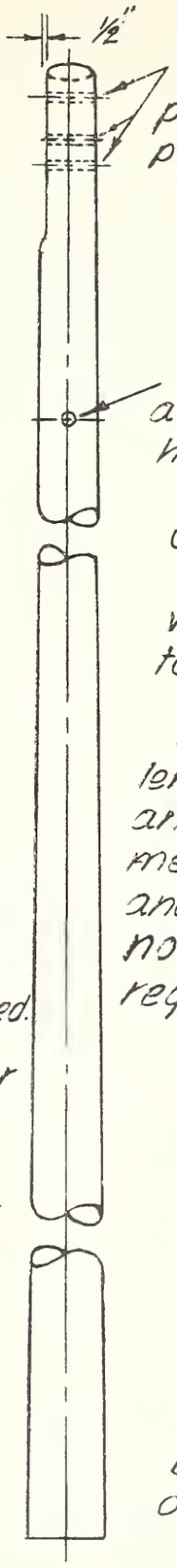
CROSSARM DRILLING GUIDE

Scale: 1/2" = 1'-0"

Date: Apr. 6, 1948

M19





Thru bolt holes must be parallel and in the same plane.

Holes:-
Drill 11/16 diameter

Neutral bolt hole must be at 90° angle with thru bolt holes.

Gains-
Gains are to be flat, with plane at right angles to bolt hole.

All poles treated full-length must bored, roofed and gained before treatment, except that Class 7 and smaller poles need not be gained unless requested by purchaser.

Flat Roof:-
Flat roofs may be cut on all full-length treated poles before treatment.

When metal disk is used for branding, center of disk must be ten feet from butt of pole.

Manufacture's Mark and Date.

Ten foot mark must be cut or burned.

Brand with proper length and class.

Brand with species and preservative code.

10'-0"

Brand butt with proper length and class

Brand with species and preservative code.

POLE FRAMING GUIDE

NO.	REVISION	DATE:
1	Reissued	8-56

Scale: ½"=1'-0"

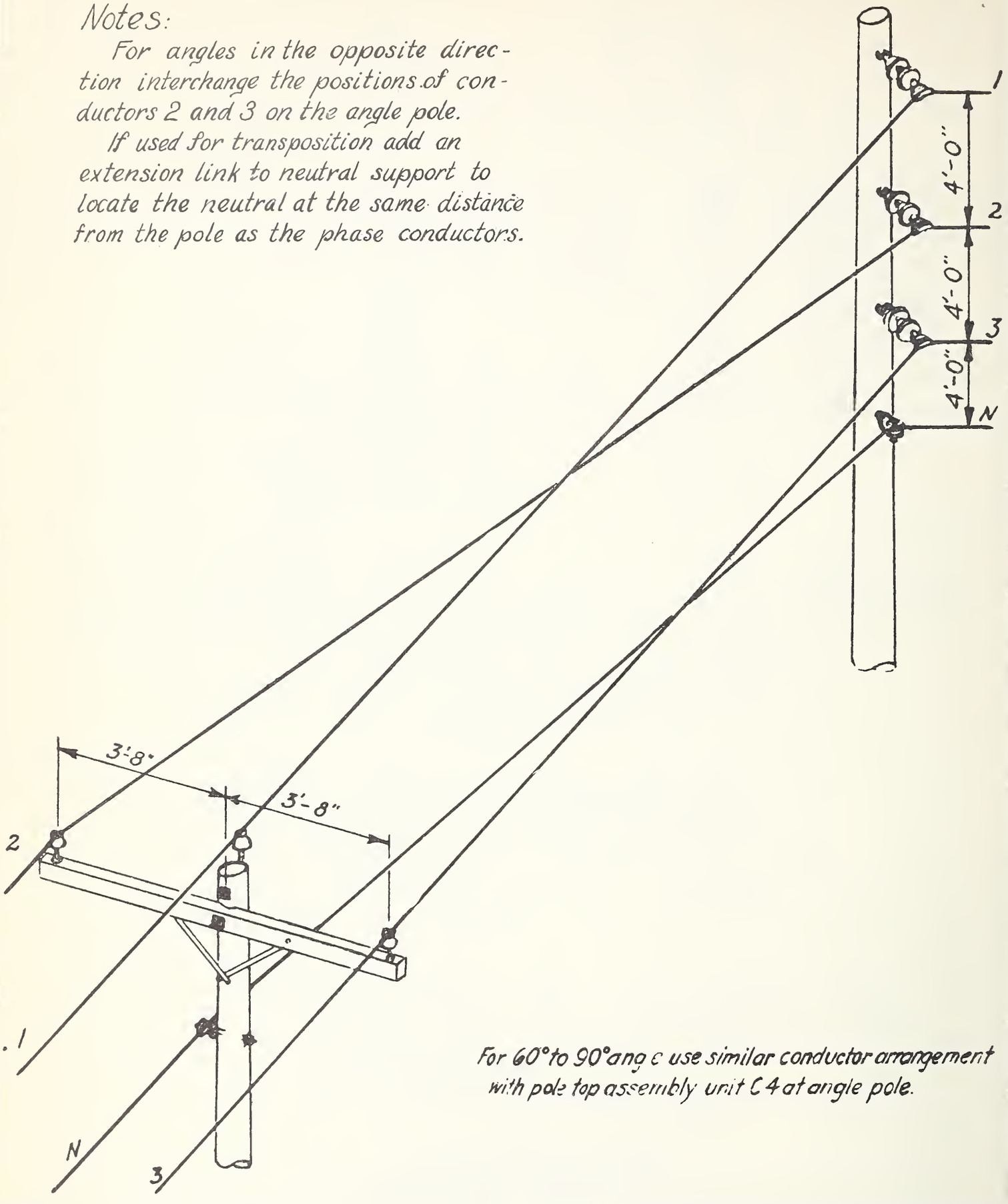
Date: Nov. 9, 1947

M20

Notes:

For angles in the opposite direction interchange the positions of conductors 2 and 3 on the angle pole.

If used for transposition add an extension link to neutral support to locate the neutral at the same distance from the pole as the phase conductors.



For 60° to 90° angle use similar conductor arrangement with pole top assembly unit C4 at angle pole.

ANGLE CONSTRUCTION GUIDE
---------KV. PRIMARY, 3-PHASE, 4-WIRE STAR
CROSSARM TO VERTICAL CONSTRUCTION - 30° TO 60° ANGLE

No.	REVISION	Date:
1	Reissued	8-56

Not to Scale

Date: July 30, 1949

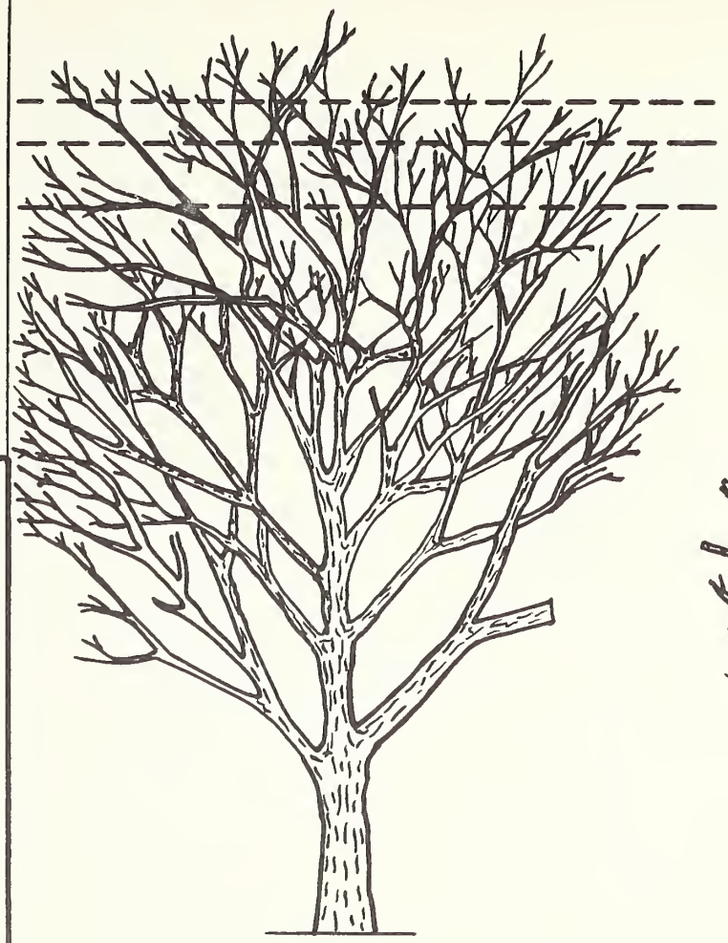
M 21.

NO.	REVISION	DATE
1	Reissued	8-56

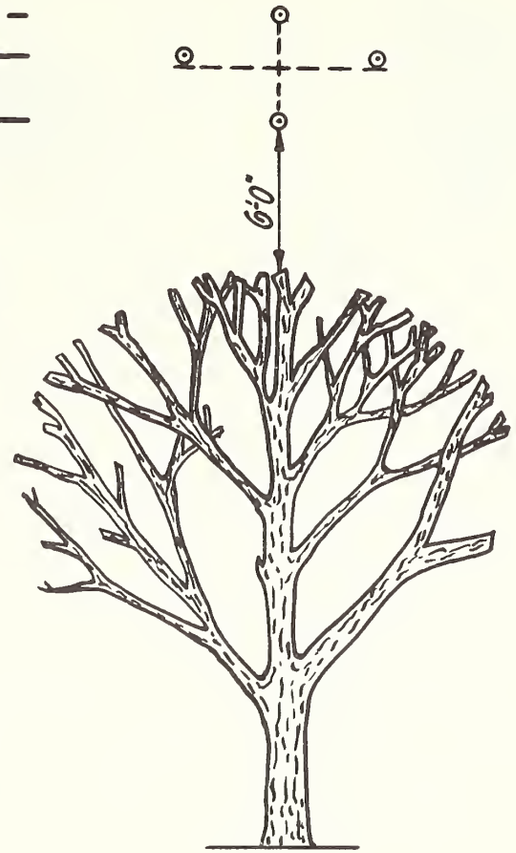
Not to scale

TREE TRIMMING GUIDE

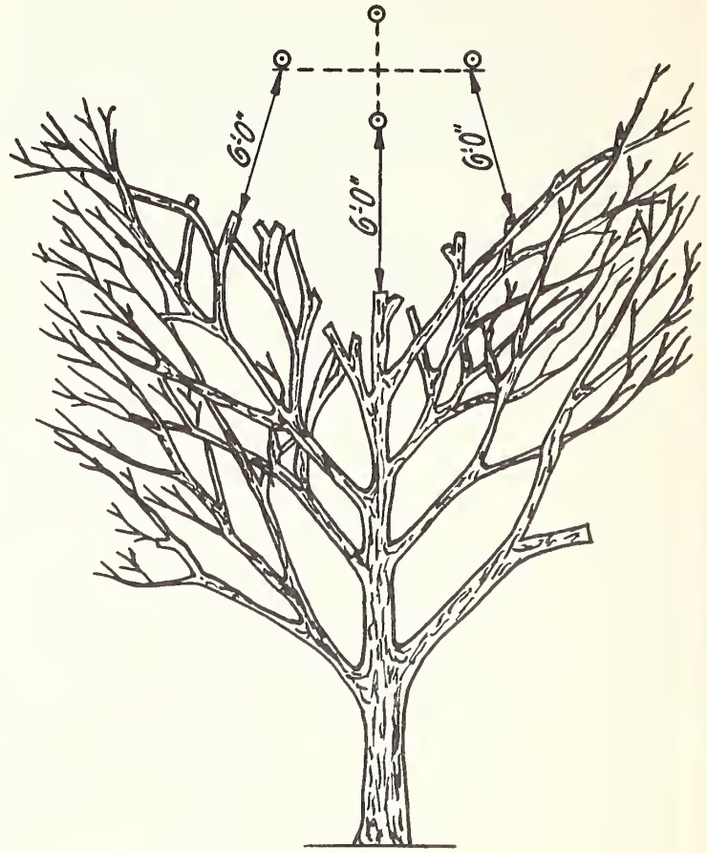
Date: M22-1



Before Trimming



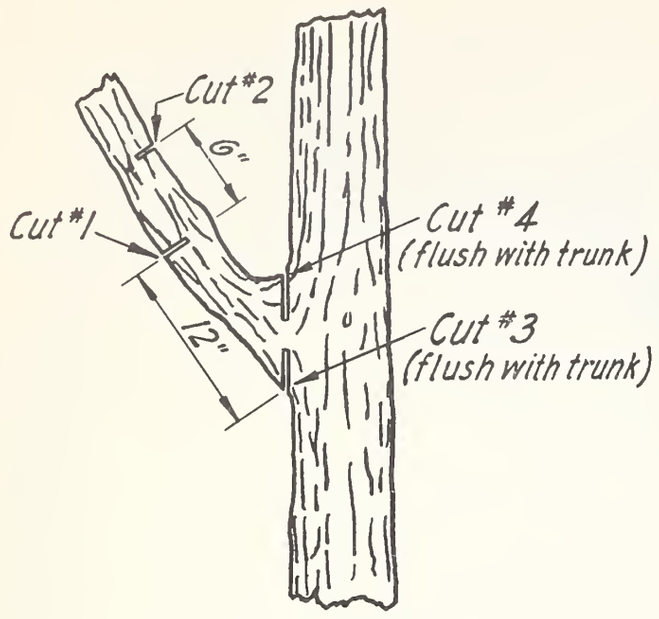
Right Way



Wrong Way

NOTE:

No parts of tree should be closer than 6'0" from open wiring.
Trimming should leave tree with symmetrical appearance.

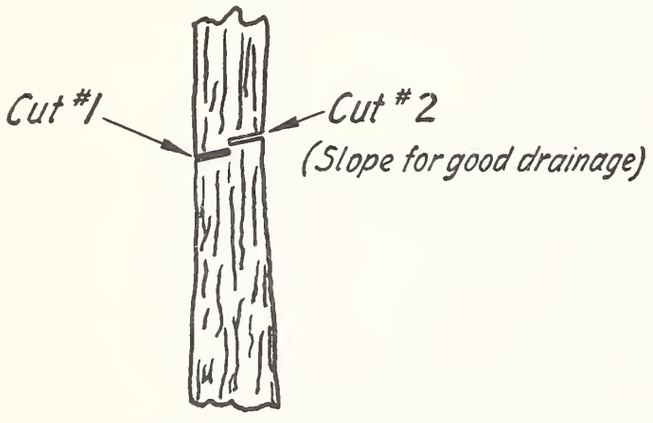


Right Way

Wrong Way

For small branches
omit Cuts #1 and #2

REMOVAL OF HEAVY SIDE LIMB



Right Way

Wrong Way

REMOVAL OF VERTICAL LIMB

NOTE: Coat final cut with tree paint.

1	Reissued	8-56
NO.	REVISION	DATE

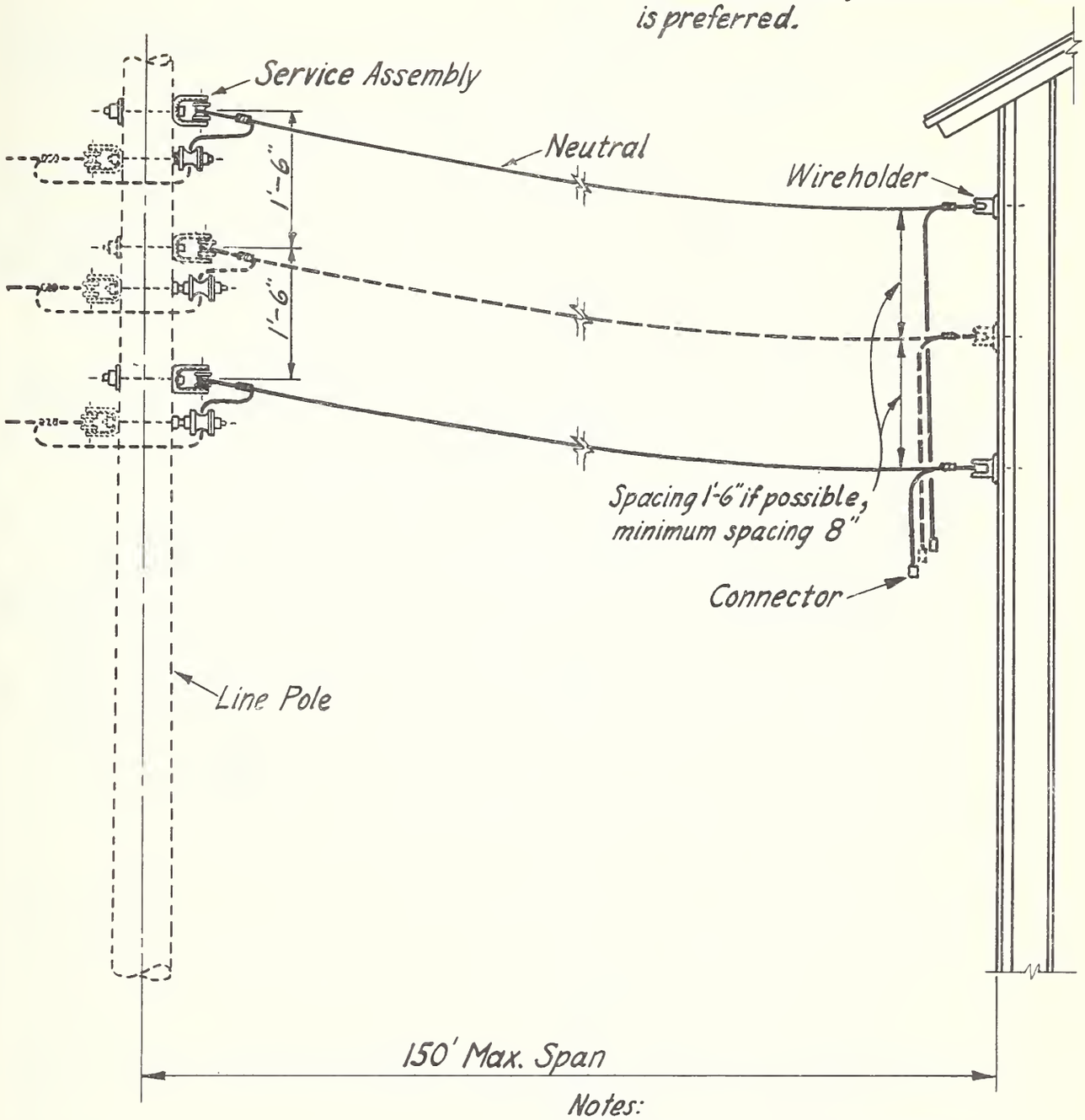
TREE TRIMMING GUIDE

Not to scale

Date:

M22-2

Vertical Arrangement of Wireholders as shown is permissible.
Horizontal Arrangement (as shown on Dwg. M24-2) is preferred.



Notes:
Insulation on covered conductor that is under strain should not be cut.

This drawing to be used as a guide and not for bidding purposes.

In brick or concrete walls use 3/8" expansion bolts or shields in 9/8" holes at least 2½" deep, or wedge expanded eyebolts.

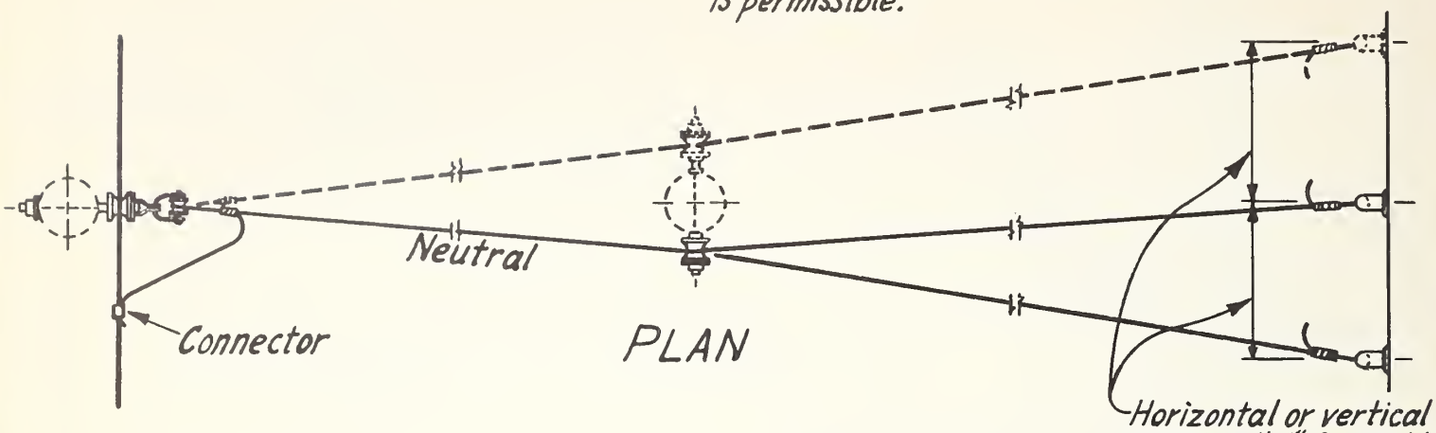
		SERVICE ASSEMBLY GUIDE
1	Reissued	8-56
No.	REVISION	Date:

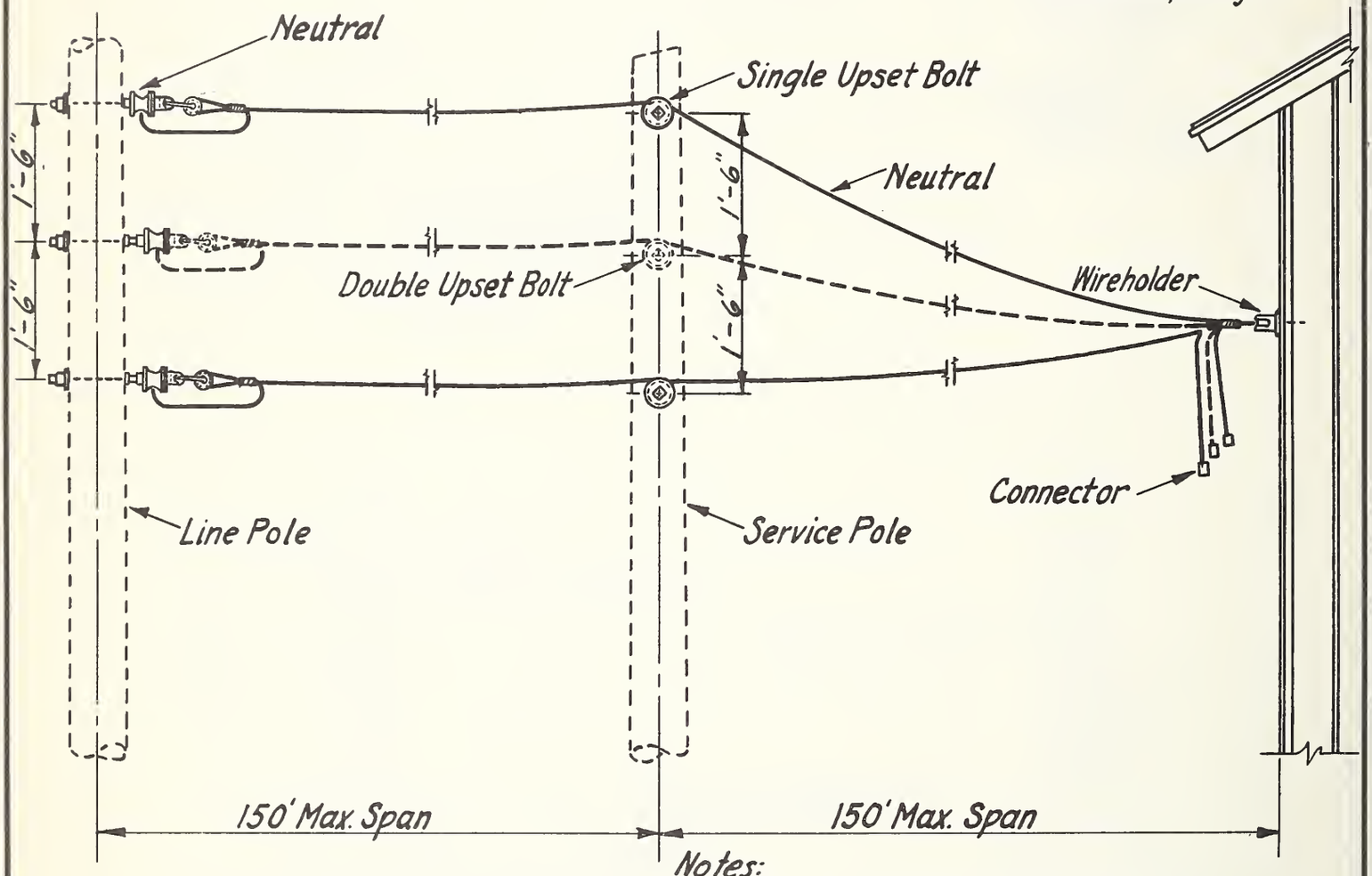
Scale: ½"=1'-0"

Date:

M24-1

Horizontal Arrangement of Wire holders as shown is preferred,
Vertical Arrangement (as shown on Dwg. M24 -1)
is permissible.



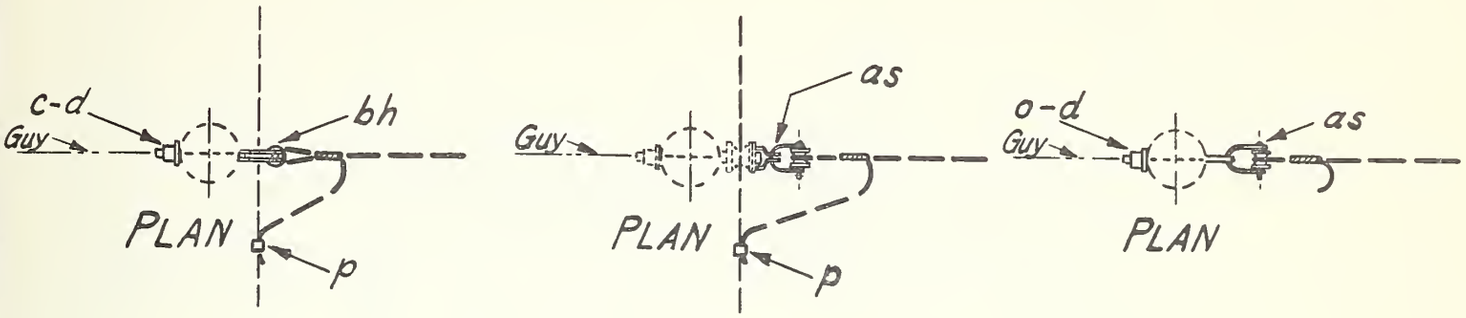


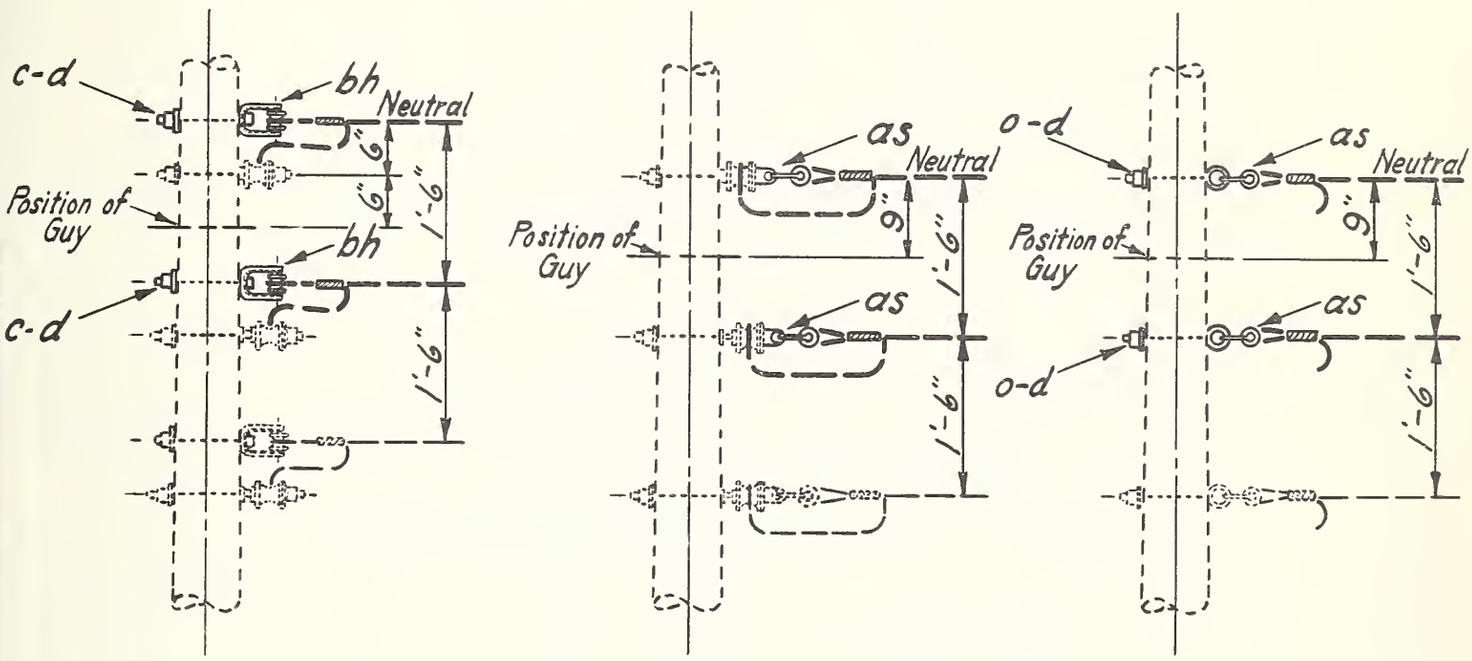
Notes:
Insulation on covered conductor that is under strain should not be cut.

This drawing to be used as a guide and not for bidding purposes.

In brick or concrete walls use 3/8" expansion bolts or shields in 5/8" holes at least 2 1/2" deep, or wedge expanded eye bolts.

	SPECIAL SERVICE ASSEMBLY GUIDE	
1 Reissued	Scale: 1/2" = 1'-0"	Date: Nov. 20, 1946
No. REVISION	Date:	M24-2





A-ASSEMBLY B-ASSEMBLY C-ASSEMBLY

Note:
Insulation on covered conductor that is under strain should not be cut.

ITEM	Nº REQ'D.	MATERIAL		ITEM	Nº REQ'D.	MATERIAL	
c		Bolt, machine, 5/8" x req'd. length		as		Clevis, service, swinging, insulated	
d		Washer, 2¼" x 2¼" x 3/16", 13/16" hole		bh		Clevis, service, deadend, insulated	
o		Bolt, eye, 5/8" x req'd. length					
p		Connectors, as req'd.					

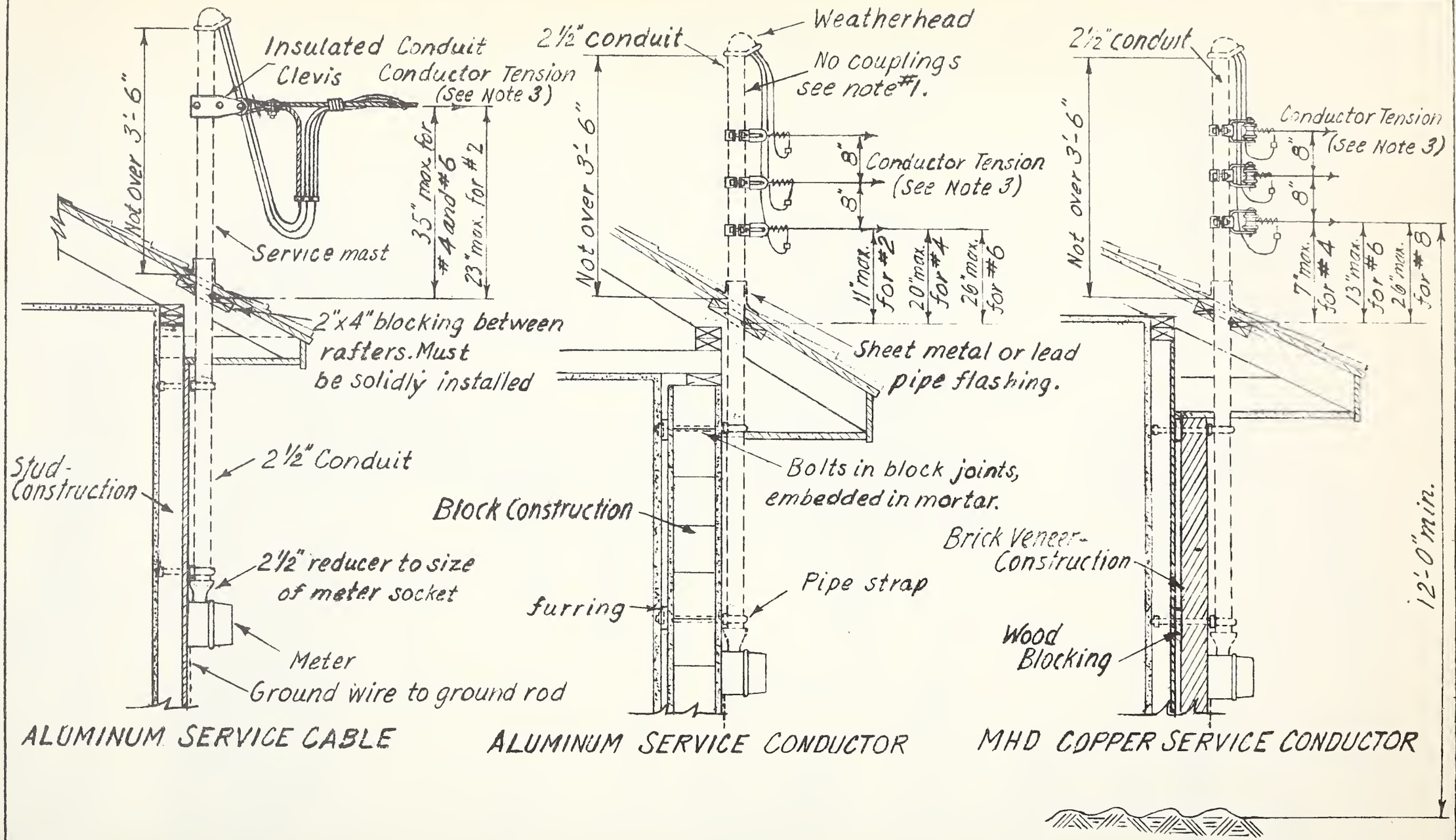
NO.	REVISION	DATE:
1	Reissued	8-56

SERVICE ASSEMBLY GUIDE
VERTICAL CONSTRUCTION-TAPS AND DEADENDS

Scale: ½" = 1'-0"

Date:

M24-3



NOTES:

1. If length of conduit exceeds ten feet, coupling will be permitted on end adjacent to meter.
2. Meter to be located 5'-6" from ground level.
3. Maximum Tension of Conductor not to exceed 50 % of ultimate strength.
4. For Service assemblies see drawing K16C, K17, K17L

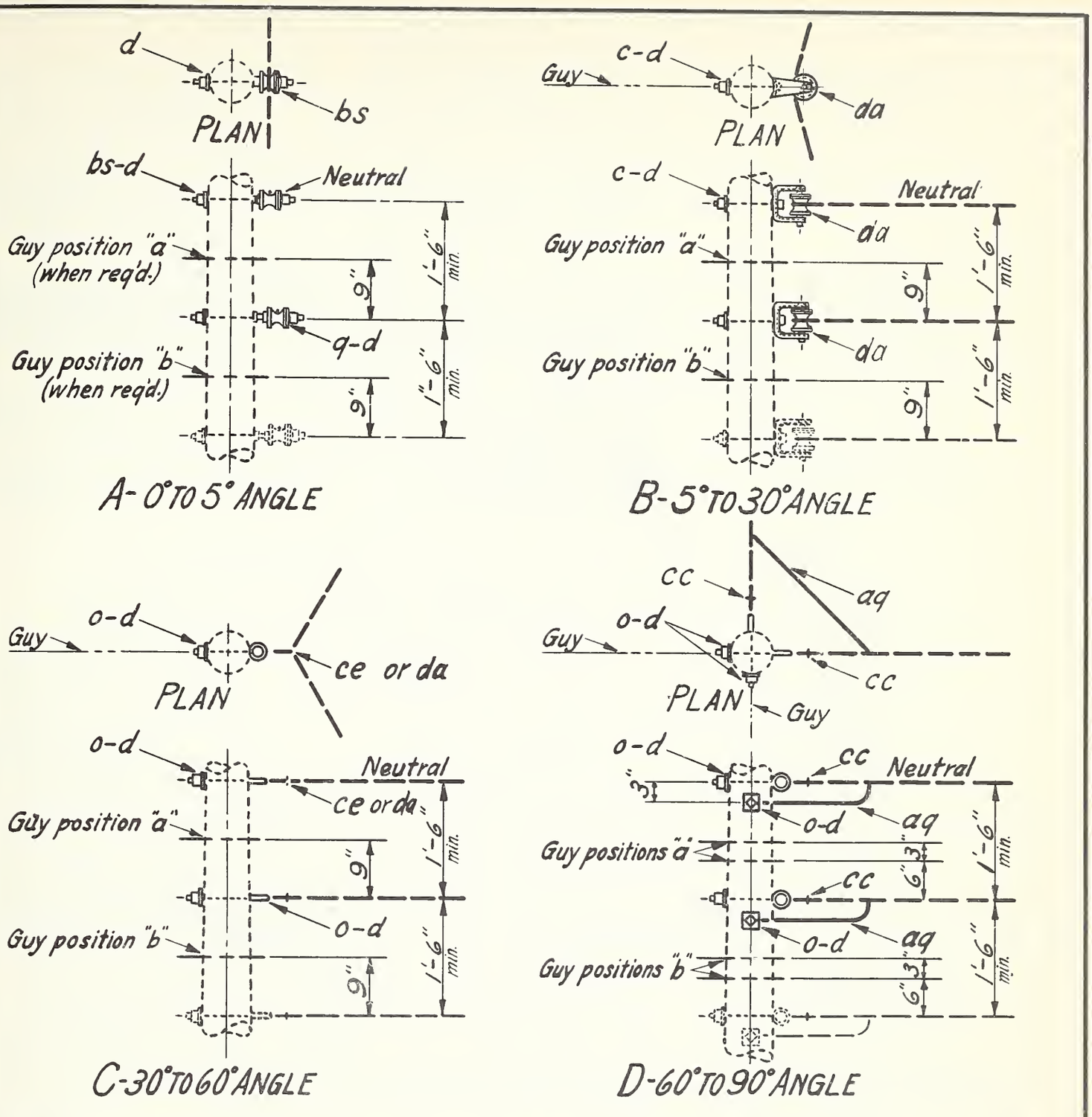
NO.	REVISION	Date:
1	Reissued	8-56

ASSEMBLY GUIDE OF SERVICE MAST FOR RANCH TYPE HOUSE

Scale: ½"=1'-0"

Date: Apr. 1, 195[illegible]

M24-10



NOTES: Guy position "a" for poles having secondary conductors only.
Guy position "b" for poles having primary and secondary conductors (underbuilt).

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
c		Bolt, machine, 5/8" x req'd. length		aq		Jumpers	
d		Washer, 2¼" x 2¼" x 3/16", 13/16 hole		bs		Bolt, single upset, insulated	
o		Bolt, eye, 5/8" x req'd. length		cc		Deadend assembly, neutral and secondary	
p		Connectors, as req'd.		ce		Angle assembly, neutral and secondary	
q		Bolt, double upset, insulated		da		Bracket, insulated	

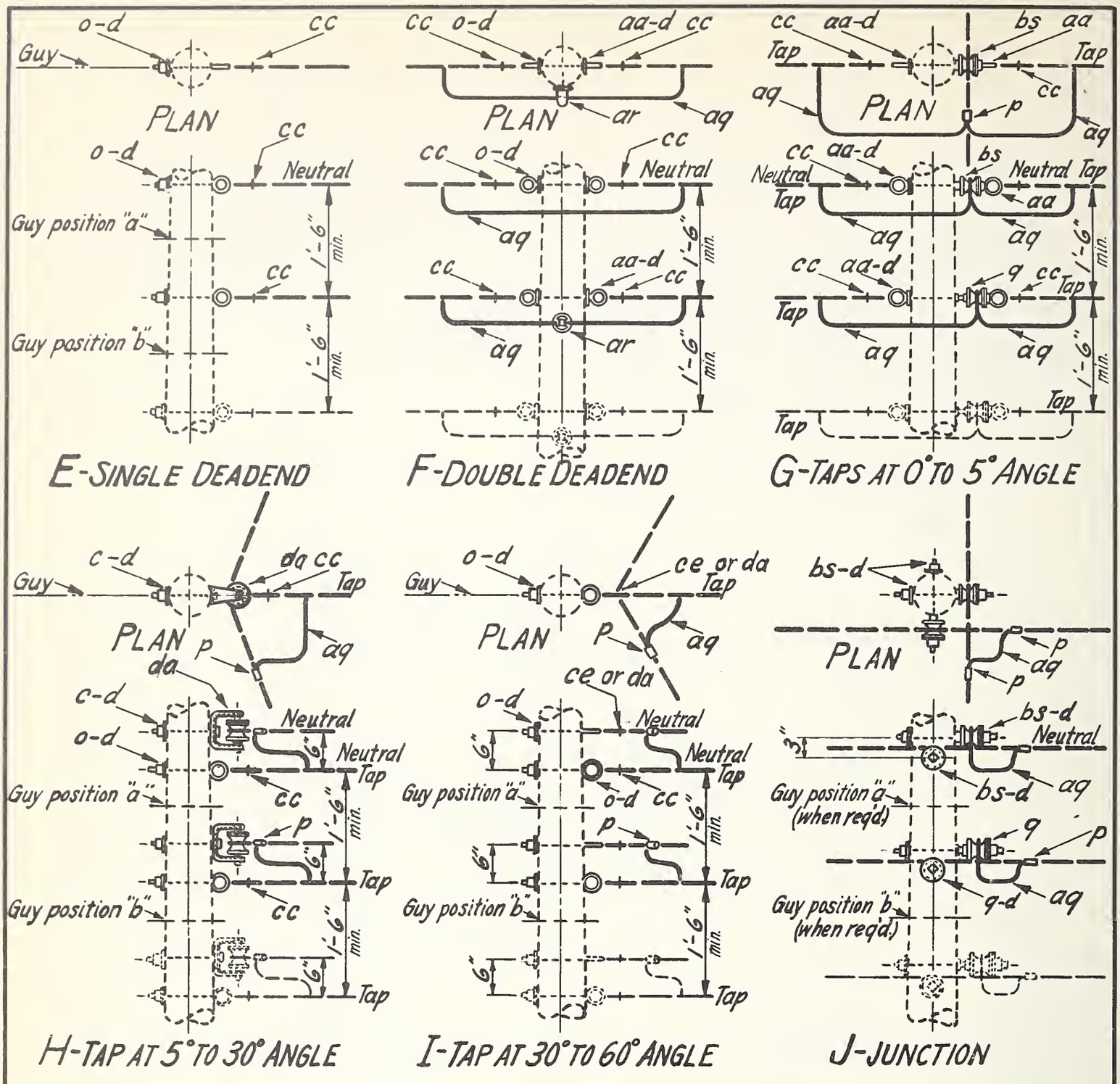
Nº	REVISION	DATE
1	Reissued	8-56

.....V. SECONDARY ASSEMBLY GUIDE
VERTICAL CONSTRUCTION - 0° TO 90° ANGLE

Scale: ½"=1'-0"

Date:

M25-1



NOTES: Guy position "a" for poles having secondary conductors only.
Guy position "b" for poles having primary and secondary conductors (underbuilt).

ITEM	No. REQD	MATERIAL		ITEM	No. REQD	MATERIAL	
d		Washer, 2¼" x 2¼" x 3/16", 13/16" hole		aq		Jumpers	
o		Bolt, eye, 5/8" x req'd. length		ar		Wireholder	
p		Connectors, as req'd.		bs		Bolt, single upset, insulated	
q		Bolt, double upset, insulated		cc		Deadend assembly, neutral and secondary	
da		Bracket, insulated		ce		Angle assembly, neutral and secondary	
aa		Nut, eye, 5/8"		c		Bolt, machine, 5/8" x req'd. length	

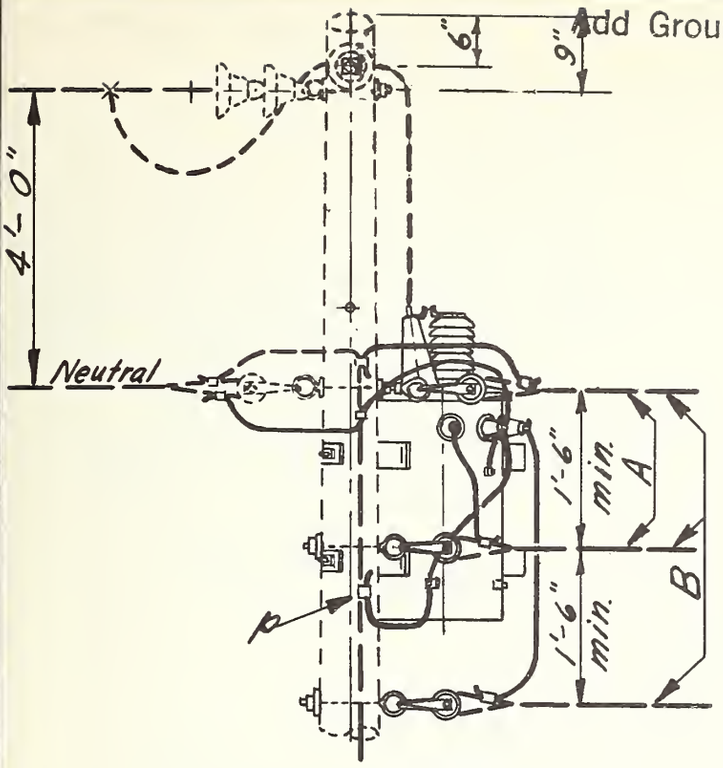
V. SECONDARY ASSEMBLY GUIDE
VERTICAL CONSTRUCTION - DEADENDS, TAPS AND JUNCTIONS

No.	REVISION	DATE
1	Reissued	8-56

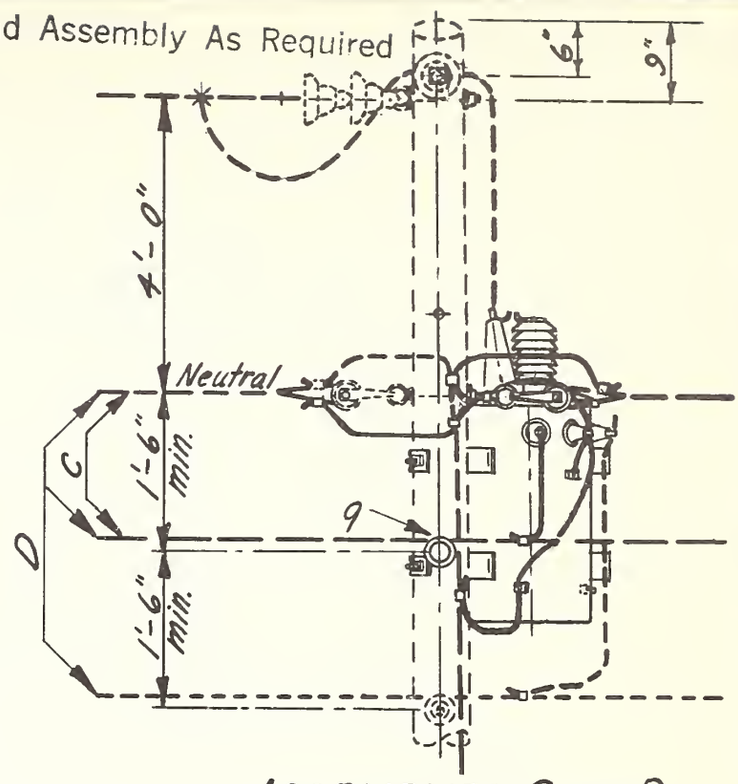
Scale: ½" = 1'-0"

Date:

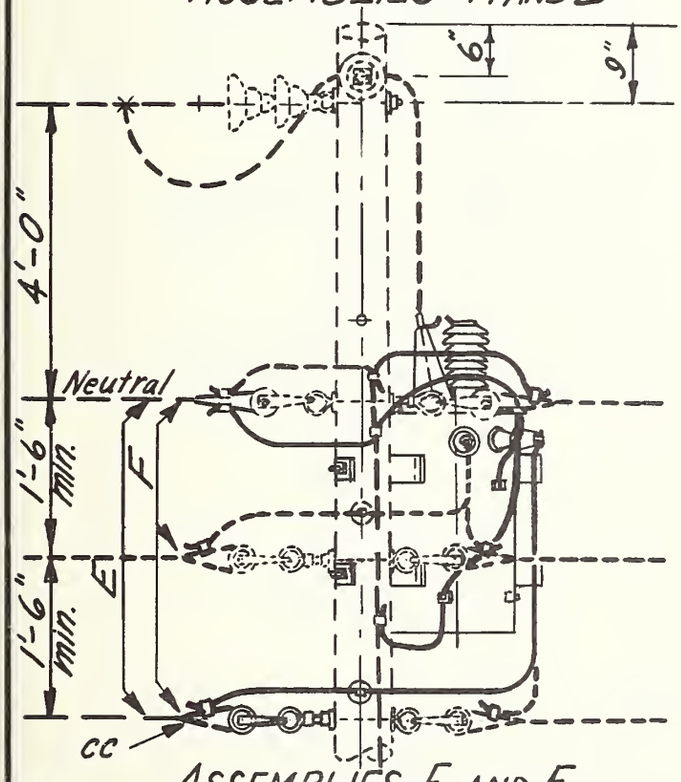
M25-2



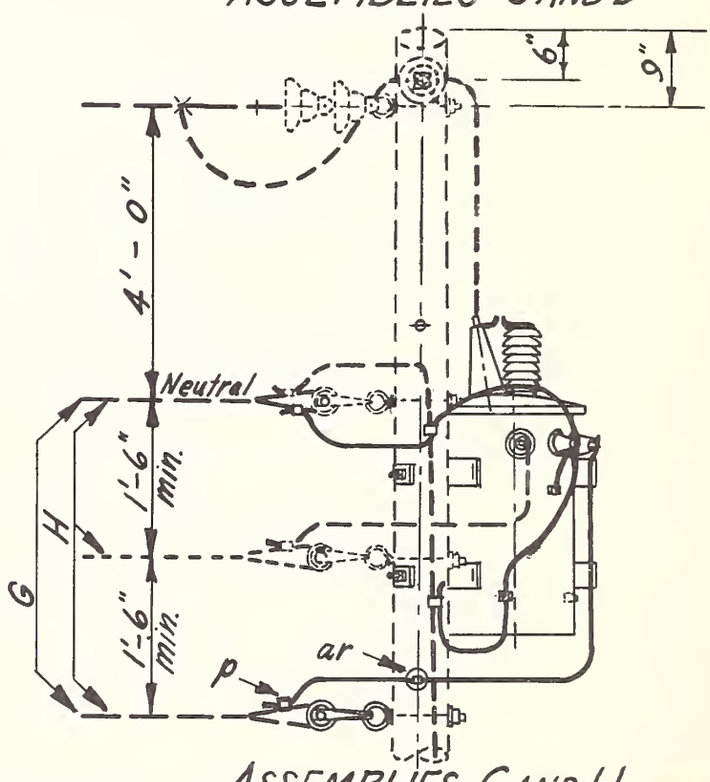
ASSEMBLIES A AND B



ASSEMBLIES C AND D



ASSEMBLIES E AND F



ASSEMBLIES G AND H

ITEM	No REQ'D	MATERIAL		ITEM	No REQ'D	MATERIAL	
d		Washer, 2¼"x2¼"x3/16", 13/16"hole		aa		Nut, eye, 5/8"	
k		Insulator, suspension		ar		Wire holder	
o		Bolt, eye, 5/8"x req'd length.		cc		Deadend assembly, secondary	
p		Connectors, as req'd					
q		Bolt, double upset, insulated					

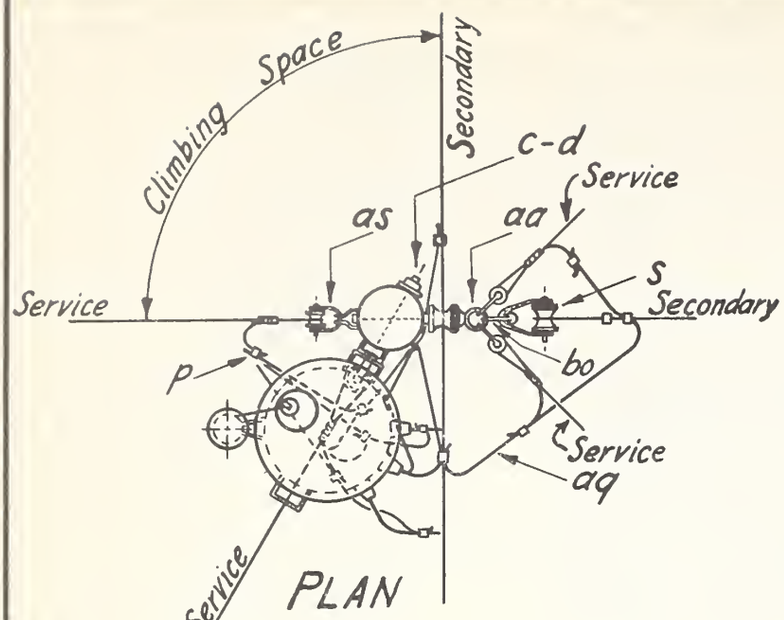
No	REVISION	DATE
1	Reissued	8-56

SECONDARY TAKE-OFF GUIDE FOR TRANSFORMER AT DEADEND

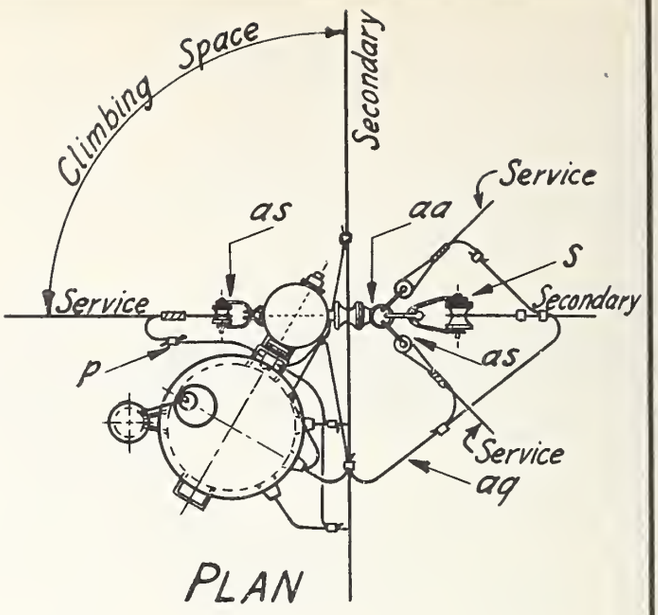
Scale: ½"=1'-0"

Date: Jan. 20, 1948

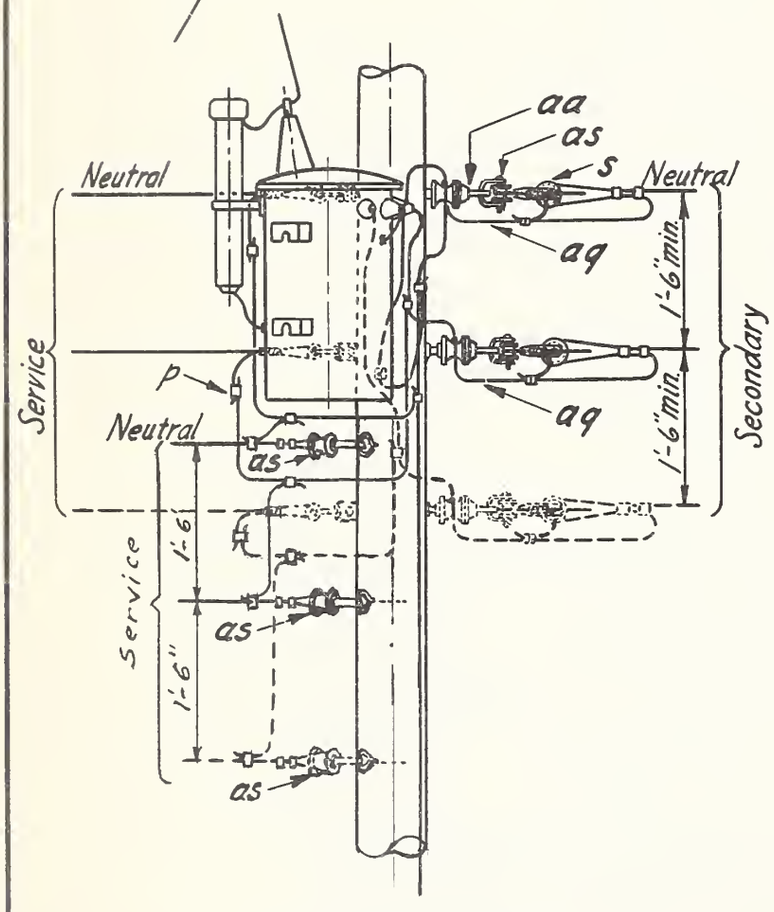
M26-1



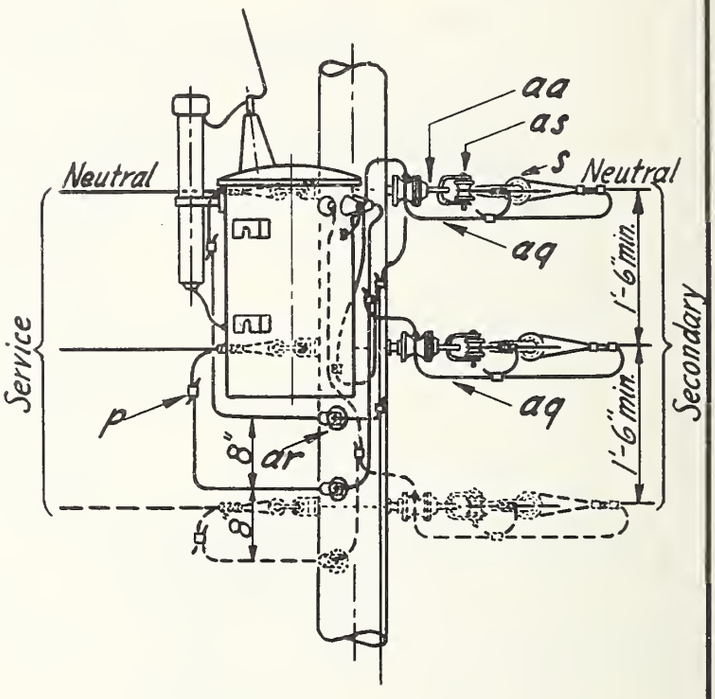
PLAN



PLAN



ELEVATION



ELEVATION

ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
c		Bolt, machine, 5/8" × req'd. length		aq		Jumpers	
d		Washer, 2¼" × 2¼" × 3/16", 13/16" hole.		ar		Wireholder	
p		Connectors, as req'd.		as		Clevis, service, swinging, insulated	
s		Clevis, secondary, swinging, insulated		bo		Shackle, anchor	
aa		Nut, eye, 5/8"					

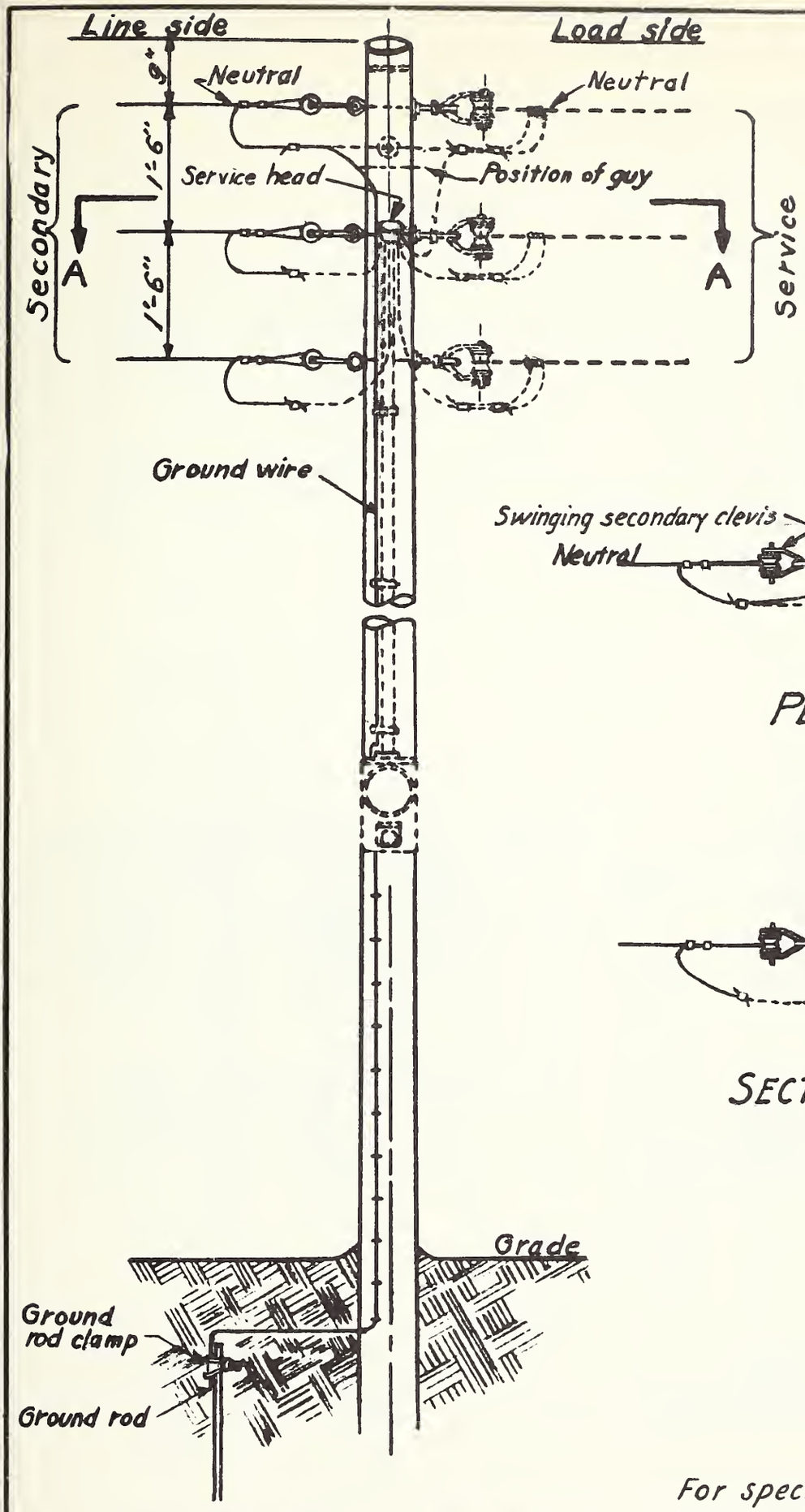
No.	REVISION	DATE
1	Reissued	8-56

TAKE-OFF GUIDE
FOR SECONDARIES AND SERVICES AT TRANSFORMER, 0° TO 5° ANGLE

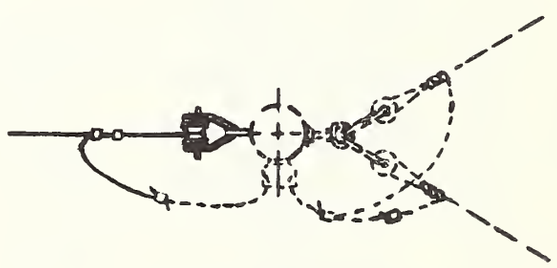
Scale: ½" = 1'-0"

Date:

M26-2



PLAN



SECTION A-A

For special metering see drawings
M8-2, M8-3, M8-4, M8-5 Volume II

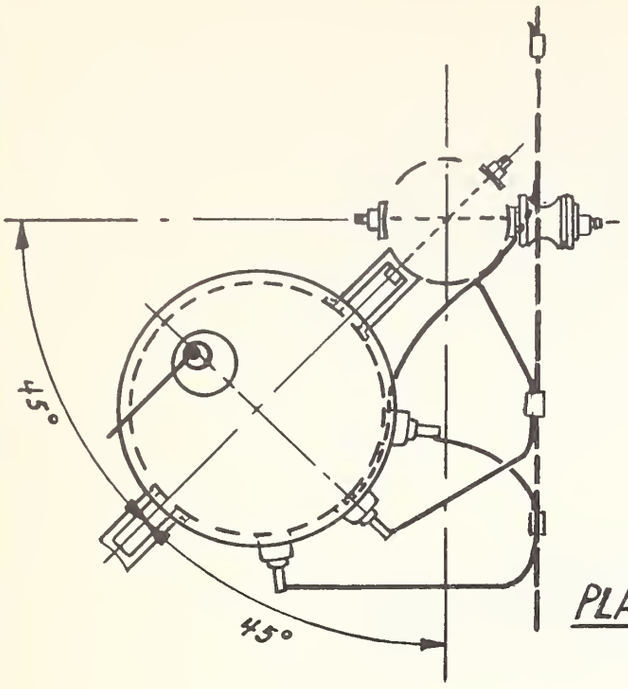
YARD POLE CONNECTION GUIDE
WITHOUT TRANSFORMER

Nº	REVISION	DATE
1	Reissued	8-56

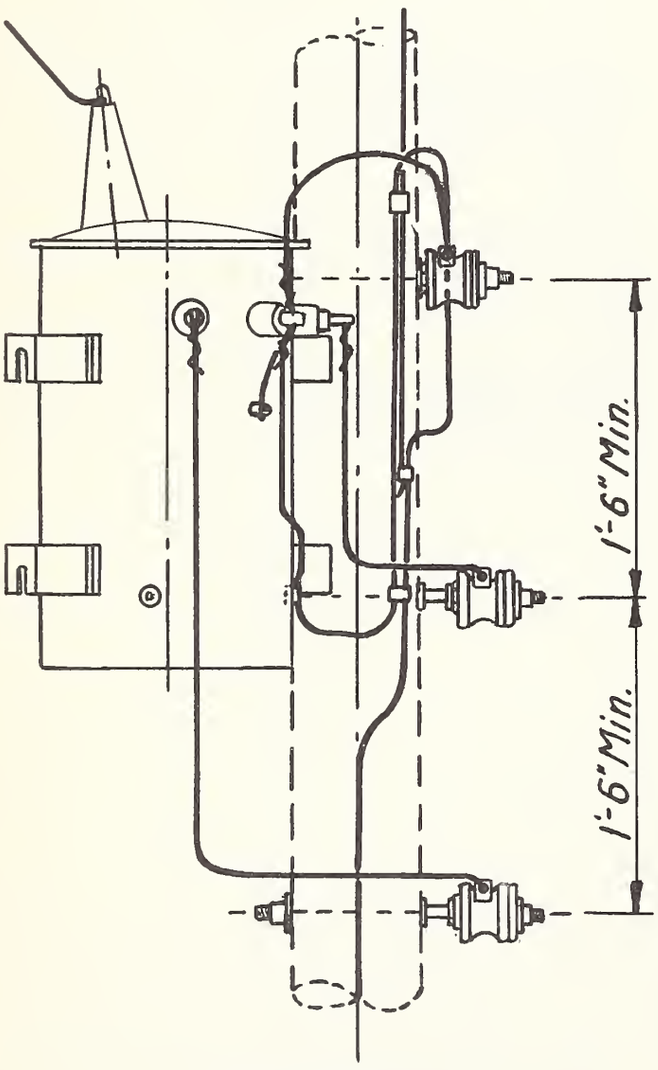
Scale 1½"=1'-0"

Date:

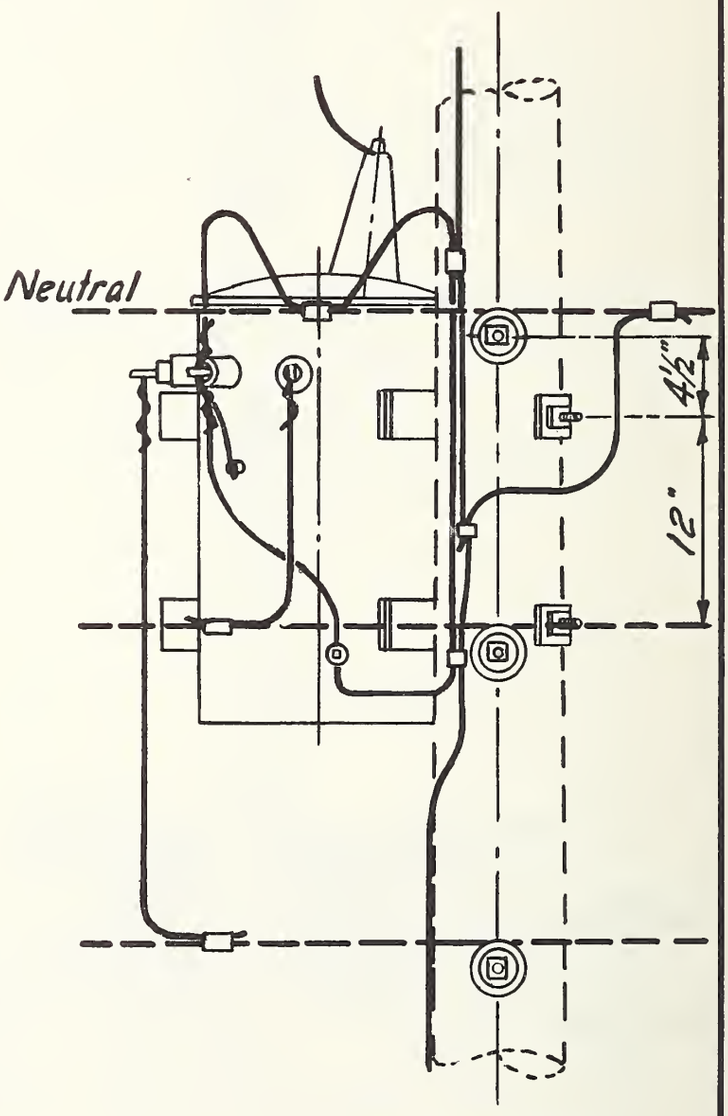
M26-3



PLAN



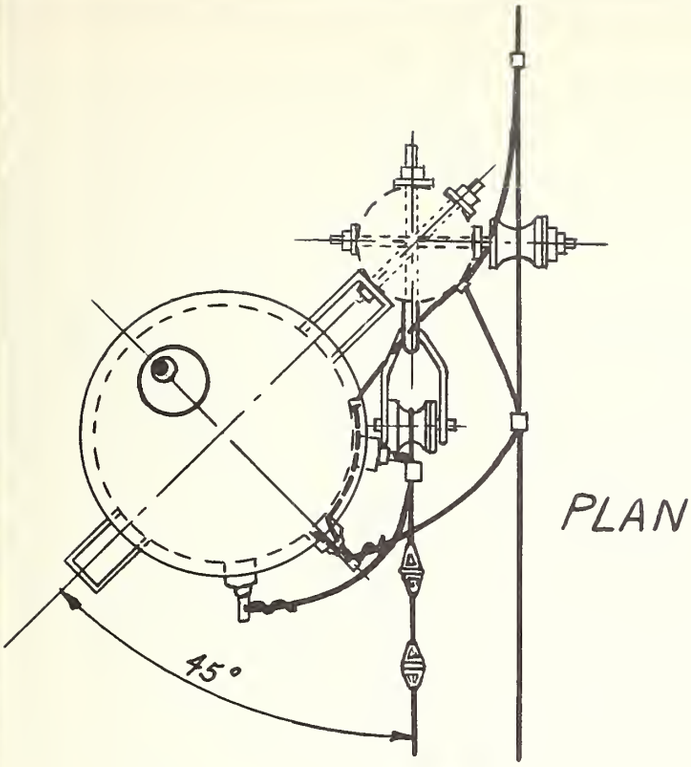
ELEVATION



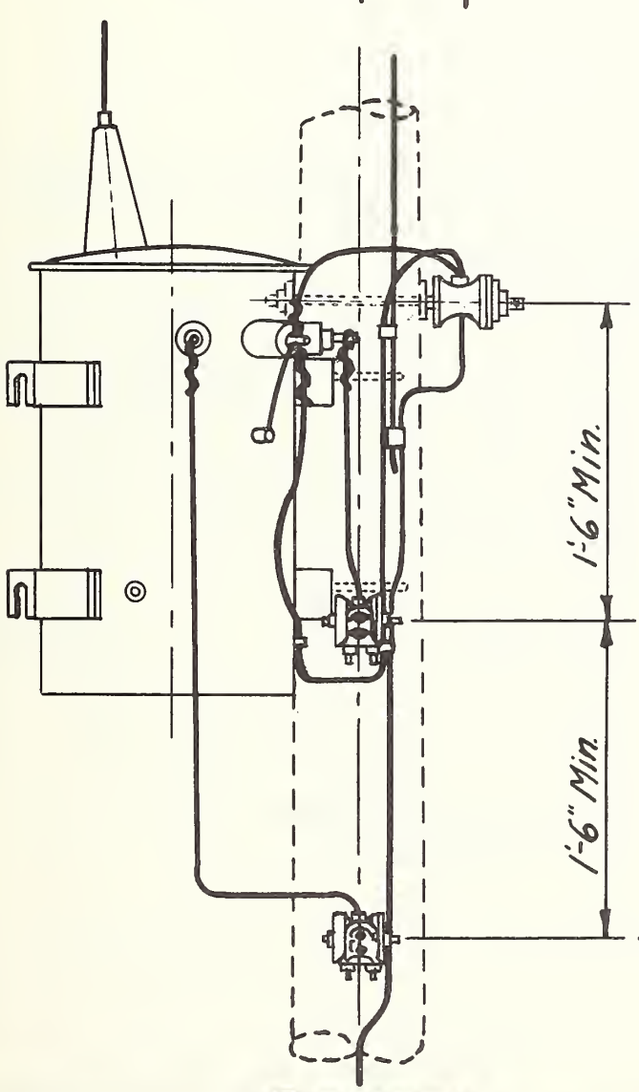
SIDE ELEVATION

SECONDARY CONNECTION GUIDE FOR TRANSFORMERS AT 0° TO 5° ANGLE

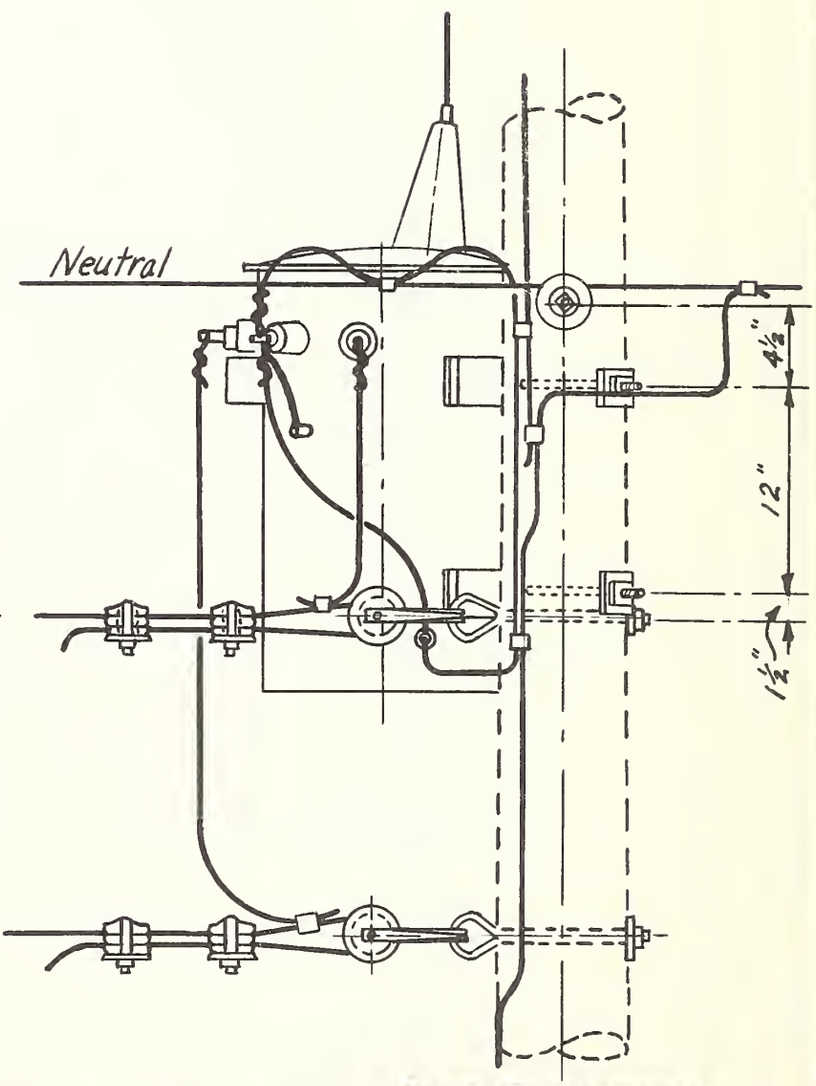
No	REVISION	DATE	Scale: 1"=1'-0"	Date:
1	Reissued	8-56		M27-1



PLAN



ELEVATION



SIDE ELEVATION

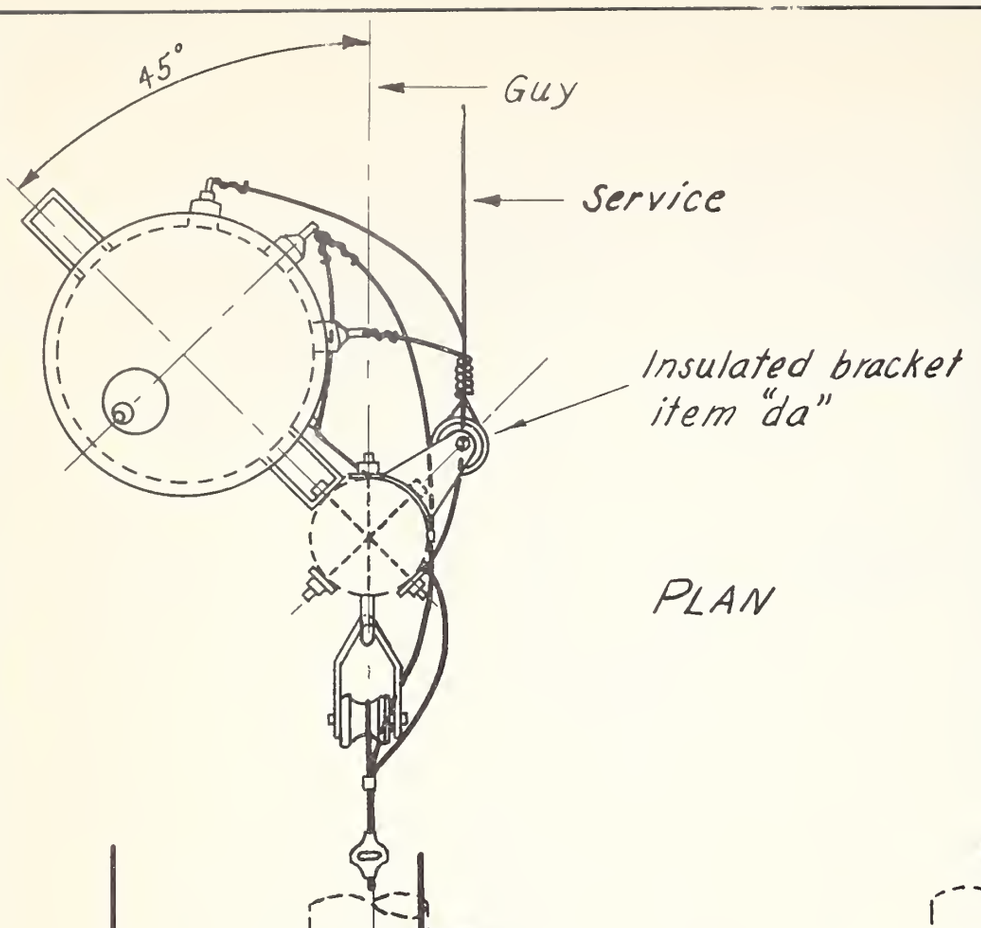
SECONDARY CONNECTION GUIDE FOR TRANSFORMERS AT SECONDARY DEADEND

№	REVISION	DATE
1	Reissued	8-56

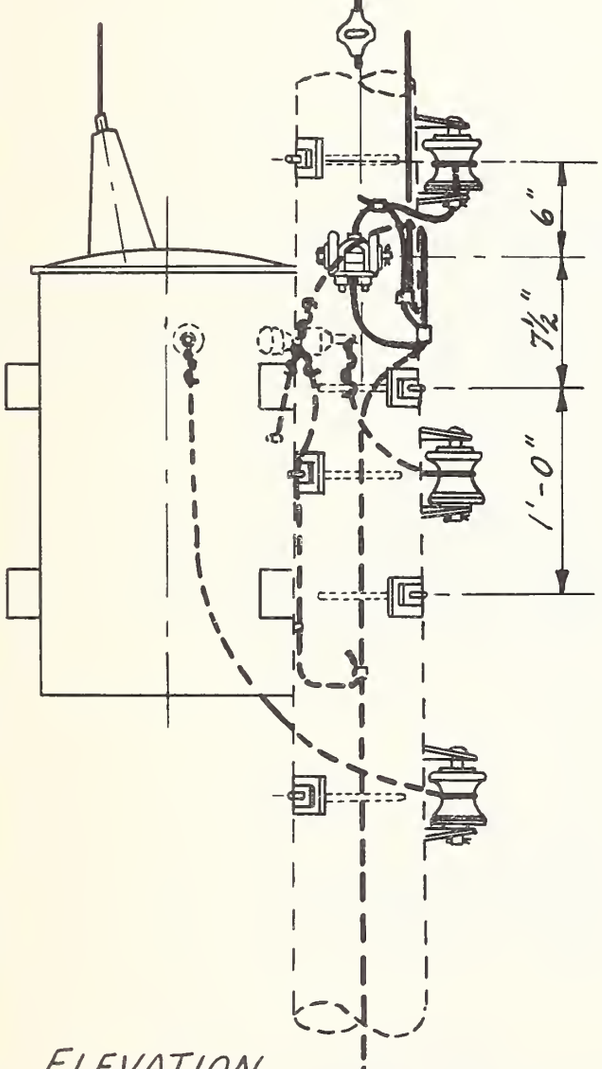
Scale: 1"=1'-0"

Date: July 13, 48

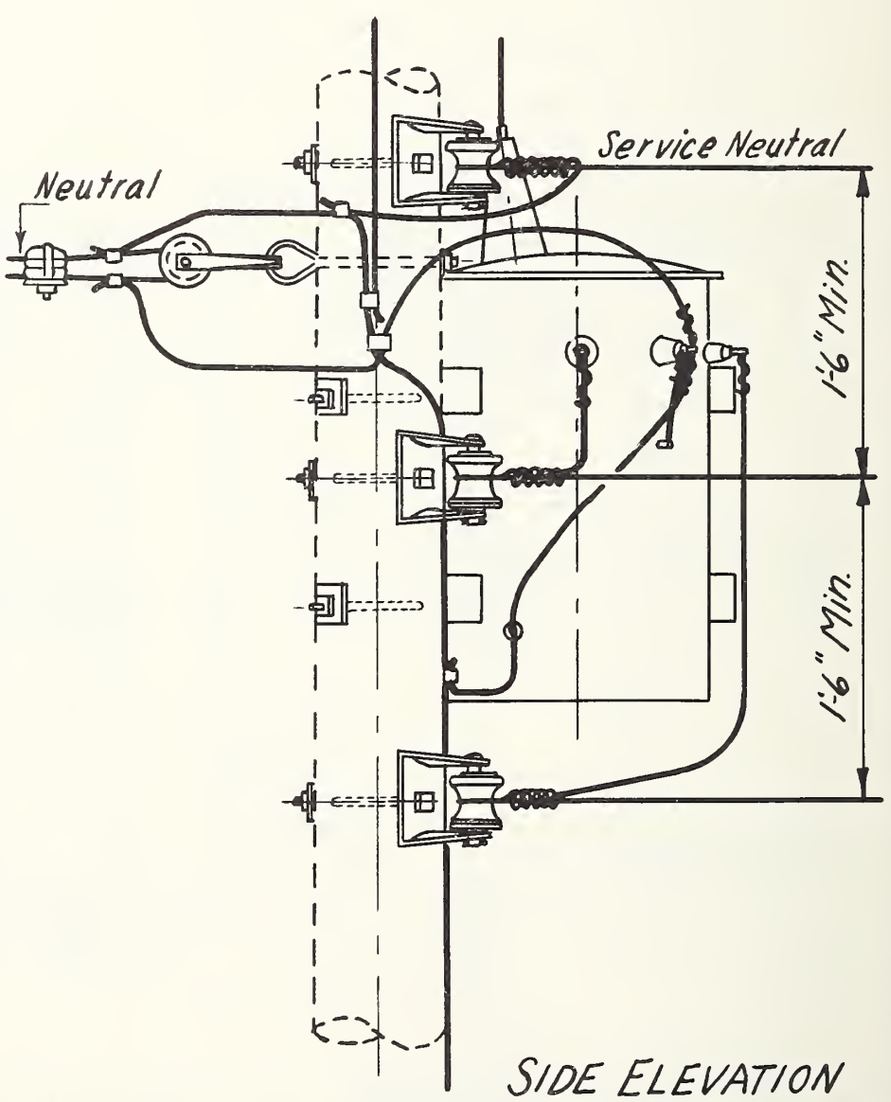
M27-2



PLAN



ELEVATION



SIDE ELEVATION

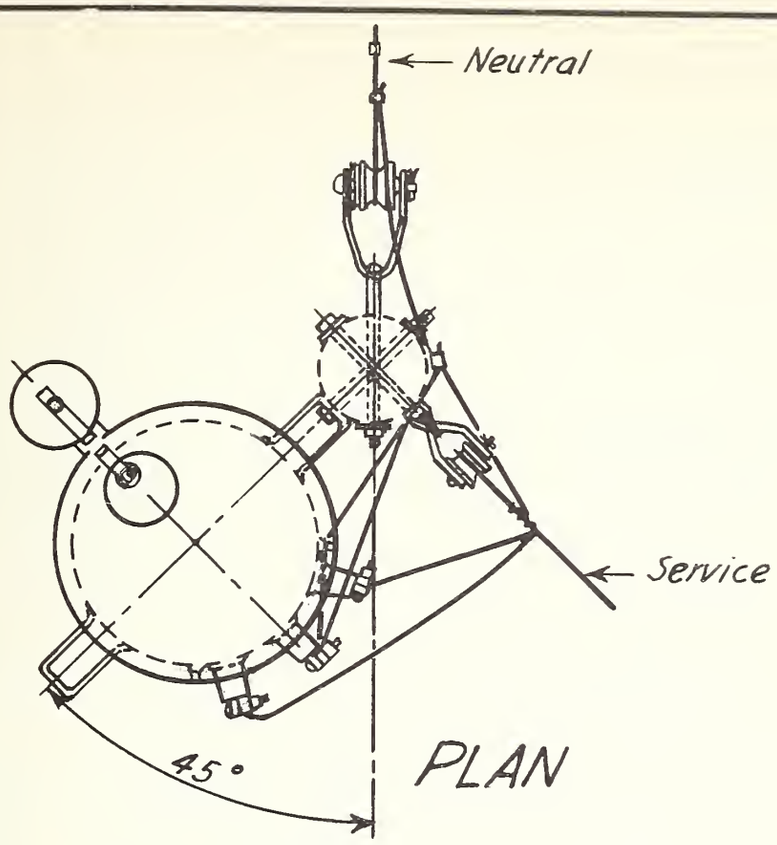
SERVICE CONNECTION GUIDE FOR TRANSFORMER AT DEADEND

No	REVISION	DATE
1	Reissued	8-56

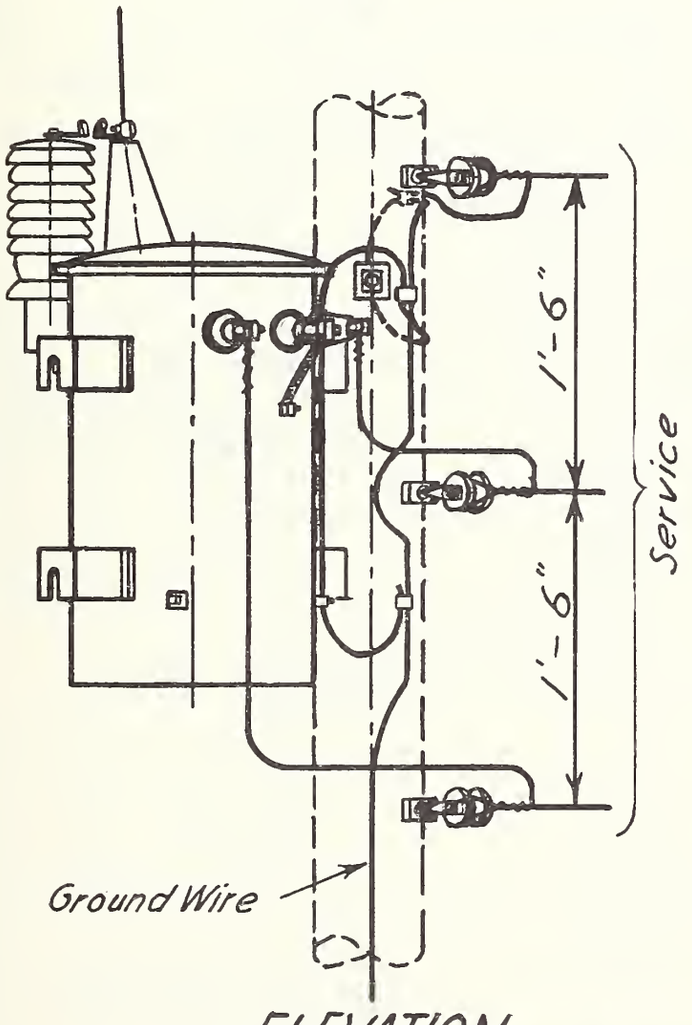
Scale: 1"=1'-0"

Date: July 13, 1948

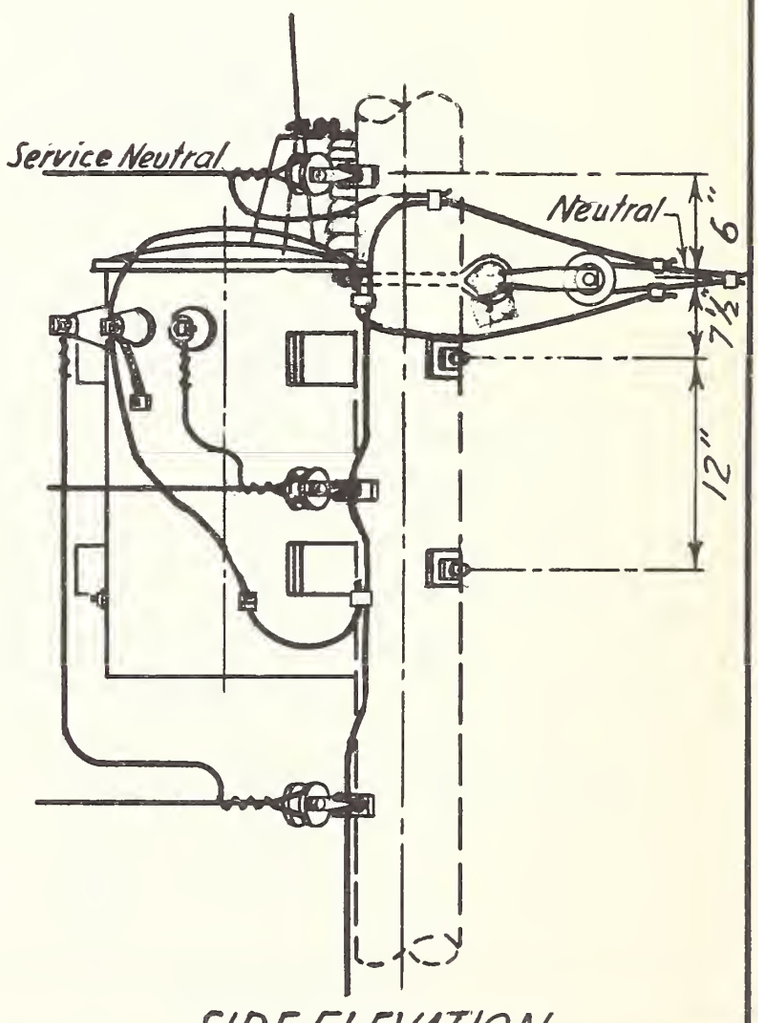
M27-3



PLAN



ELEVATION

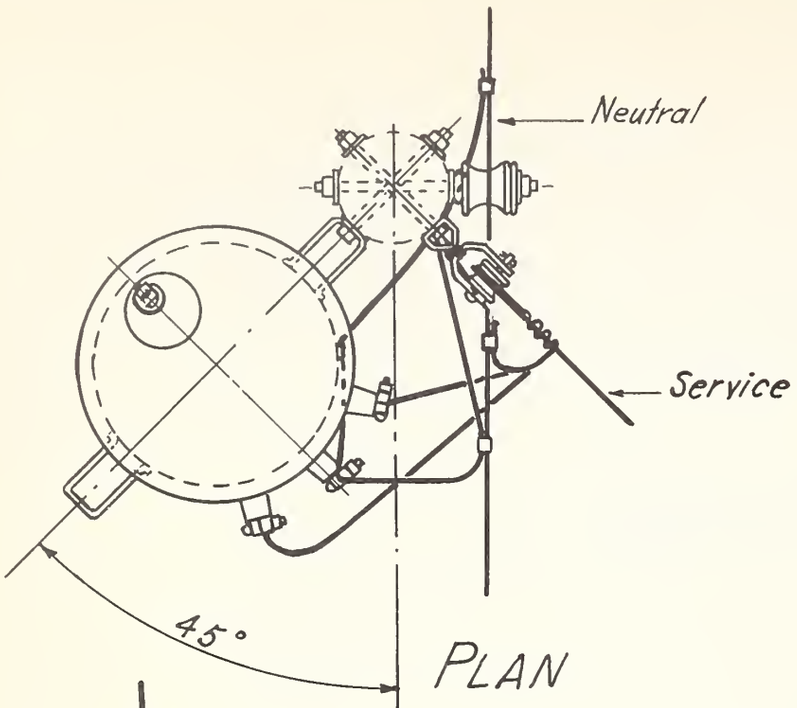


SIDE ELEVATION

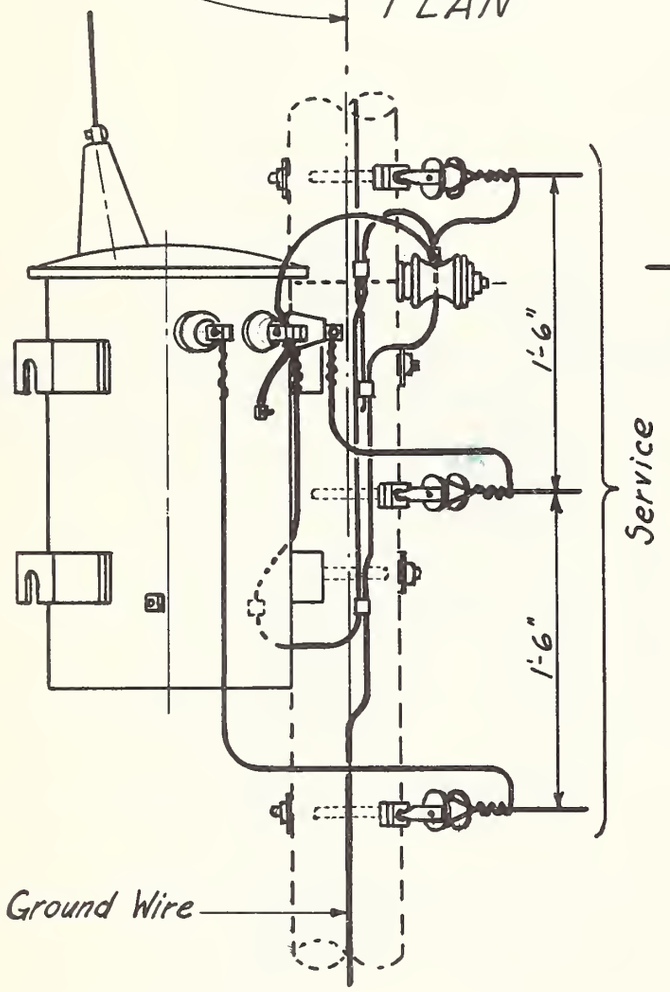
SERVICE OR SECONDARY CONNECTION GUIDE SELF PROTECTED TRANSFORMER AT DEADEND

Scale: 1"=1'-0"		Date: July 13, 1948
		M 28

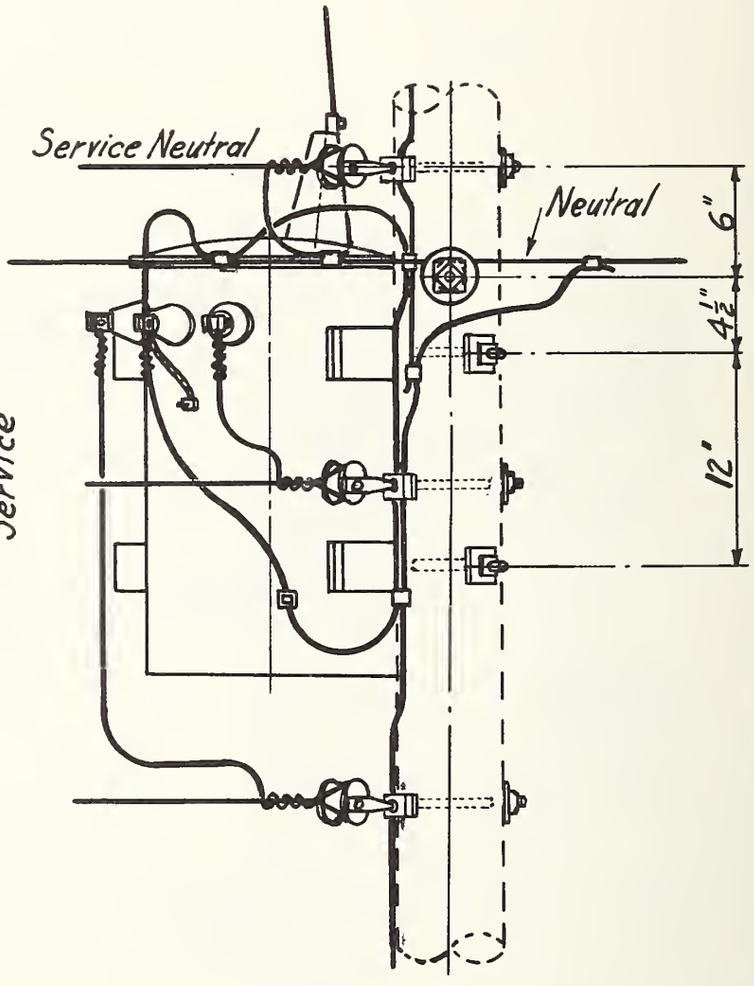
Nº	REVISION	DATE
1	Reissued	8-56



PLAN



ELEVATION



SIDE ELEVATION

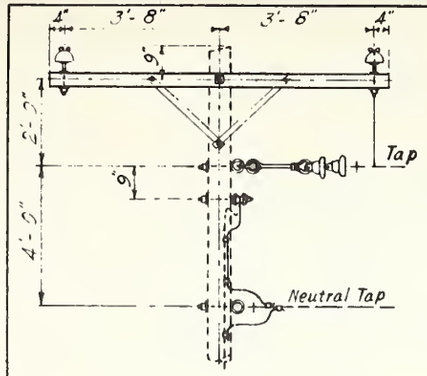
SERVICE OR SECONDARY CONNECTION GUIDE
CONVENTIONAL TRANSFORMER

Scale: 1"=1'-0"

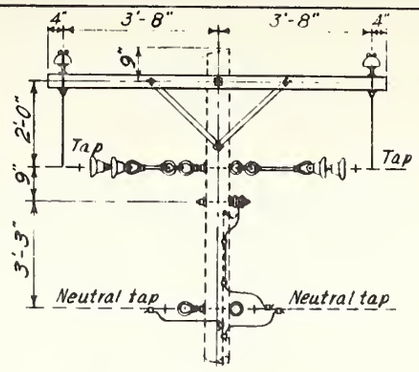
Date: July 13, 1948

M28-1

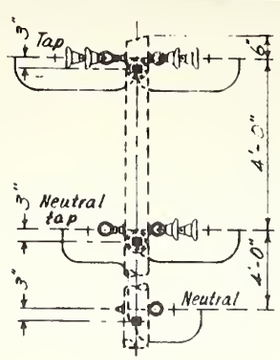
No	REVISION	DATE
1	Reissued	8-56



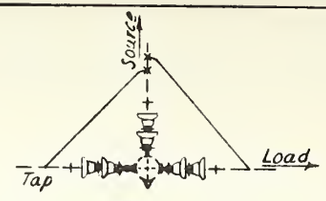
COMPLETE ASSEMBLY
A5-2 AND B1



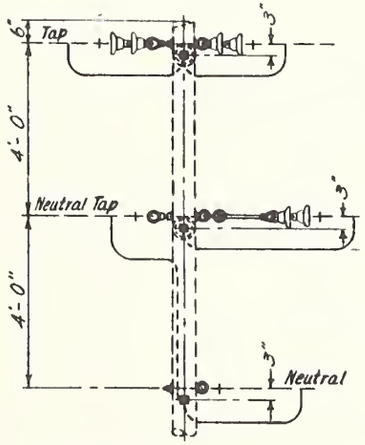
COMPLETE ASSEMBLY
A5-2 AND B1



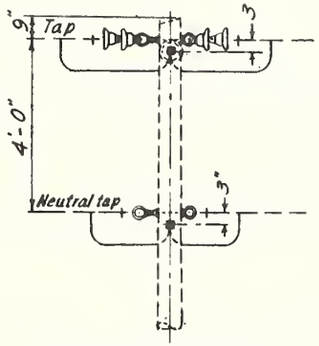
COMPLETE ASSEMBLY
A5-3 AND B4



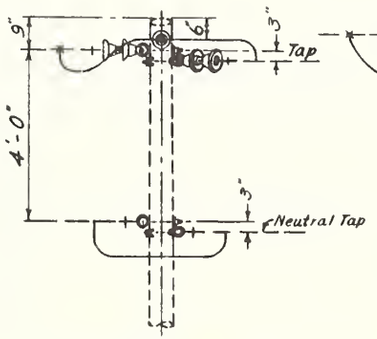
PLAN



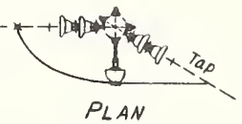
COMPLETE ASSEMBLY
A5-3 AND B4-1



COMPLETE ASSEMBLY
A5-3 AND A4



COMPLETE ASSEMBLY
A5-4A AND A5



PLAN

Note:

Maintain 2" spacing in air and 4" spacing over wood between Neutral or ground wire and Primary hardware.

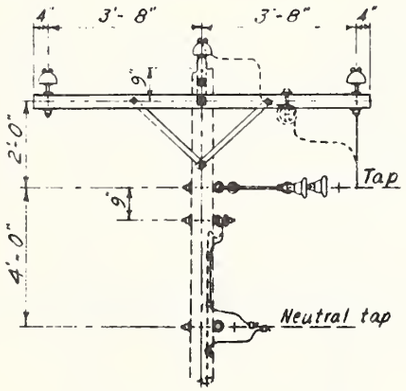
Notes: Add pole protection grounds as shown on drawings M30-1 and M30-2.
This drawing illustrates the addition of standard tap assemblies to other standard pole top assemblies.

TAP ASSEMBLY GUIDE

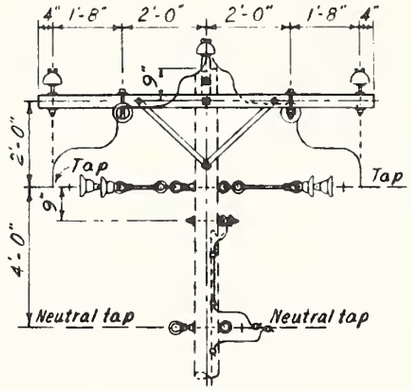
Scale: 3/8"=1'-0"

Date: July 12, 1956

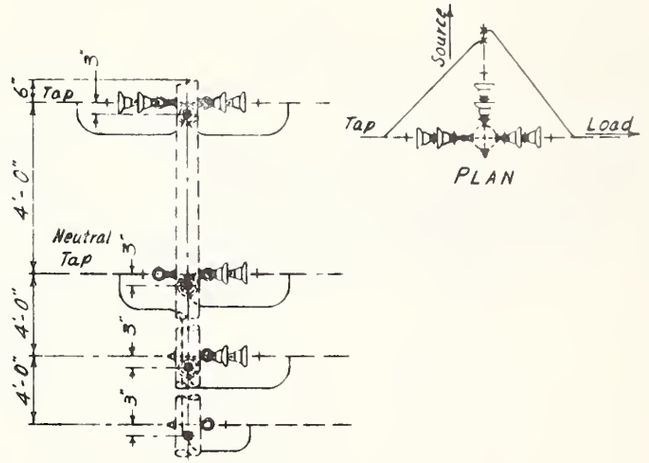
M29-1



COMPLETE ASSEMBLY
A5-2 AND C1



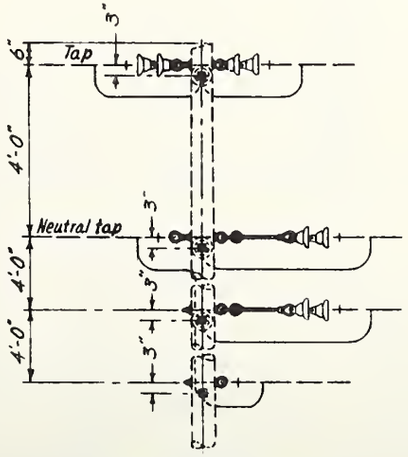
COMPLETE ASSEMBLY
A5-2 AND C1



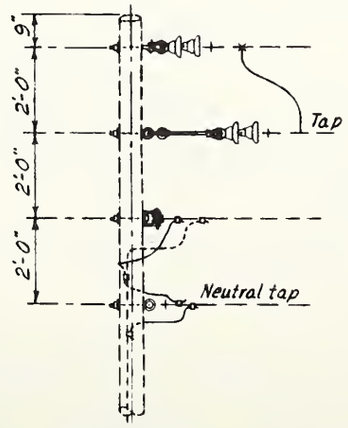
COMPLETE ASSEMBLY
A5-3 AND C4

Note:

Maintain 2" spacing in air and 4" spacing over wood between Neutral or ground wire and Primary hardware.



COMPLETE ASSEMBLY
A5-3 AND C4-1



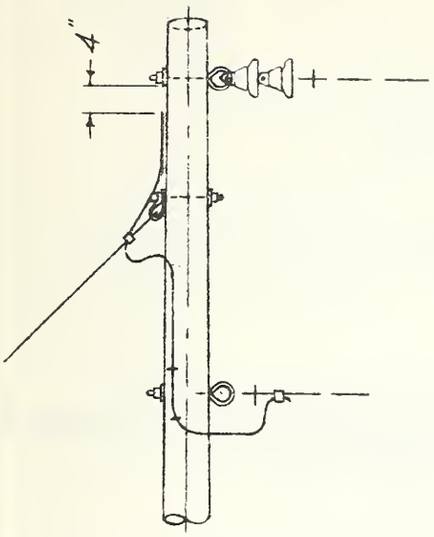
COMPLETE ASSEMBLY
A5-2 AND A3

Notes: Add pole protection grounds as shown on drawings M30-1 and M30-2.
This drawing illustrates the addition of standard tap assemblies to other standard pole top assemblies.

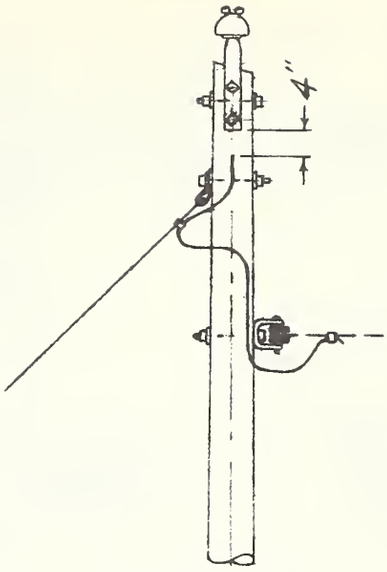
TAP ASSEMBLY GUIDE

Scale: 3/8"=1'-0" | Date: July 12, 1956

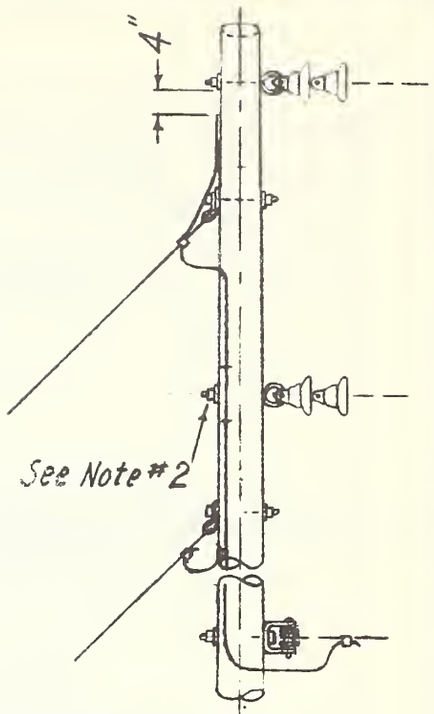
M29-2



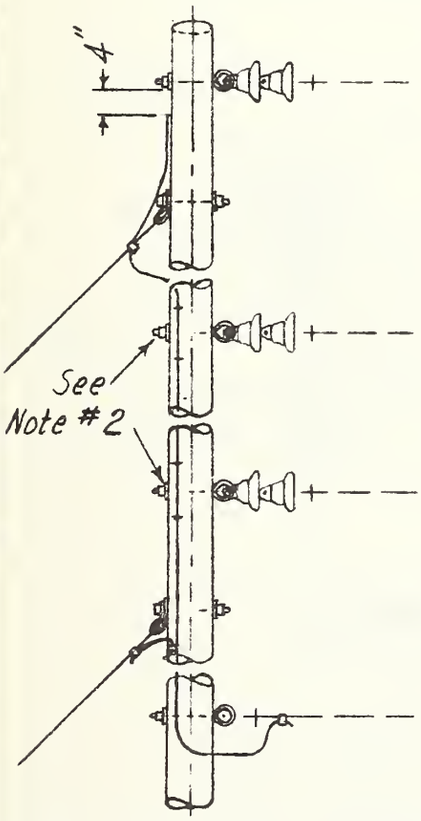
AT SINGLE PHASE ANGLES AND DEADENDS



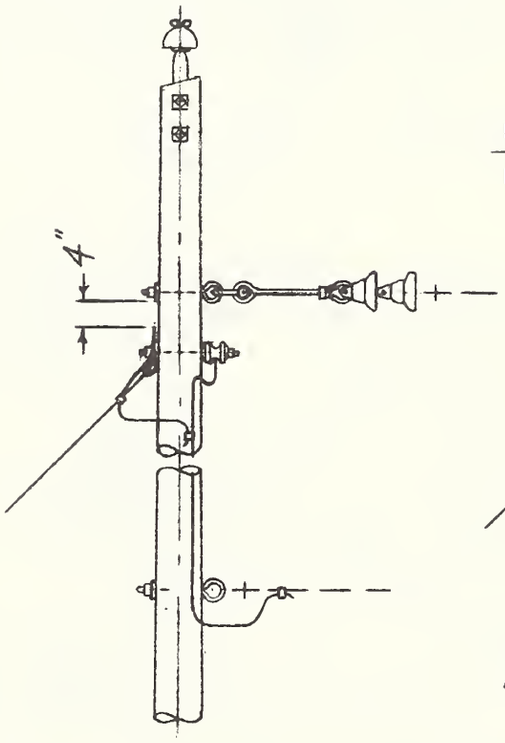
AT SINGLE PHASE ANGLES



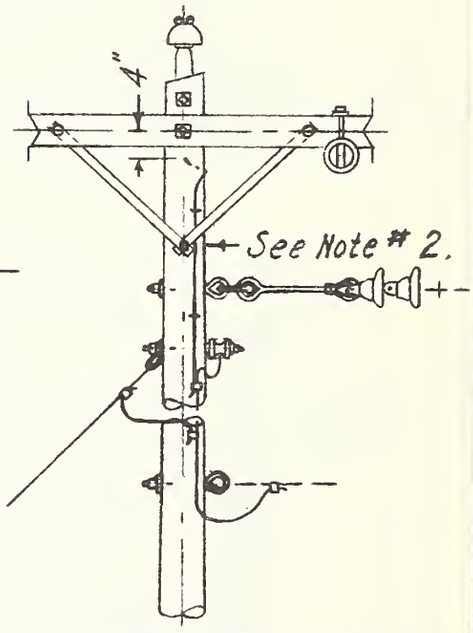
AT V-PHASE ANGLES AND DEADENDS



AT THREE PHASE ANGLES AND DEADENDS



AT SINGLE PHASE TAP ASSEMBLY



AT V OR THREE PHASE TAP ASSEMBLY

Notes: 1. An M2-12 ground assembly may be added if desired.

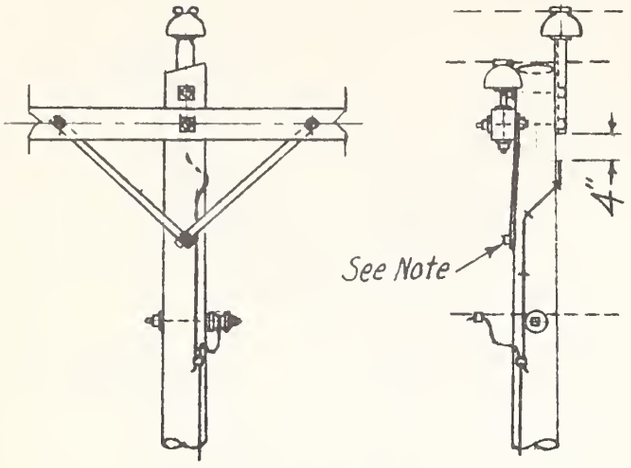
2. Position of staple is important. Maintain 4" min. distance from staple or clip to lag screw or eye bolt.

GUIDE FOR INSTALLATION OF GROUND WIRE ABOVE NEUTRAL ON GUYED POLES

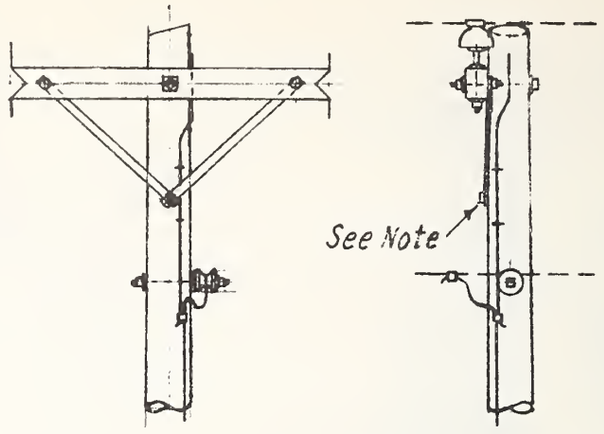
Scale: 3/8"-1'-0"

Date: April 12, 1956

M30-1

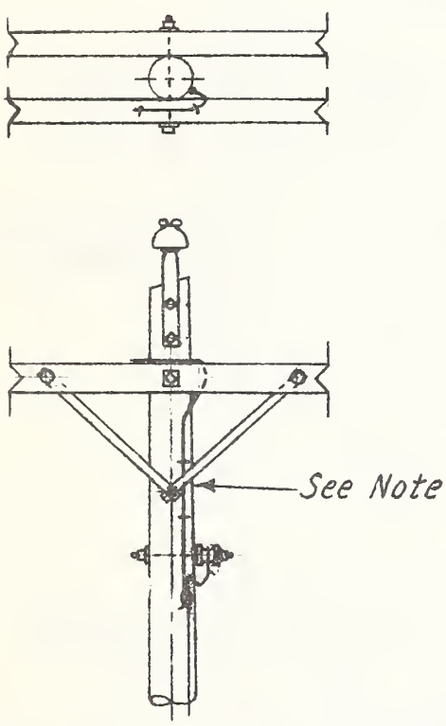


AT SINGLE ARM ASSEMBLIES WITH POLE TOP PIN

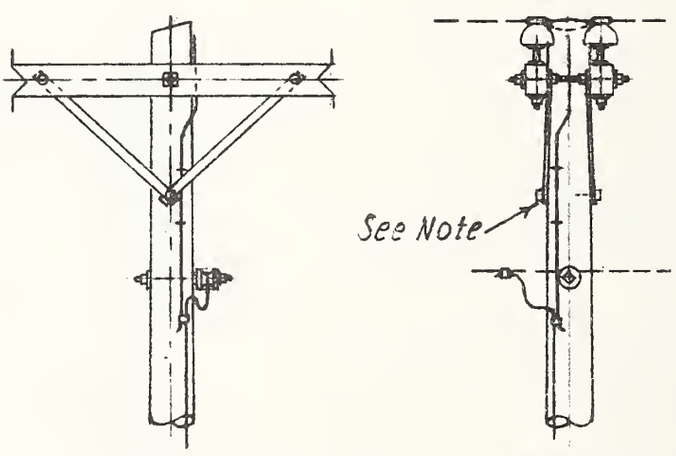


AT SINGLE ARM ASSEMBLIES WITHOUT POLE TOP PIN

Note:
Position of staple is important.
Maintain 4" min. distance from staple or clip to lag screw or eye bolt.



AT DOUBLE ARM ASSEMBLIES WITH POLE TOP PINS



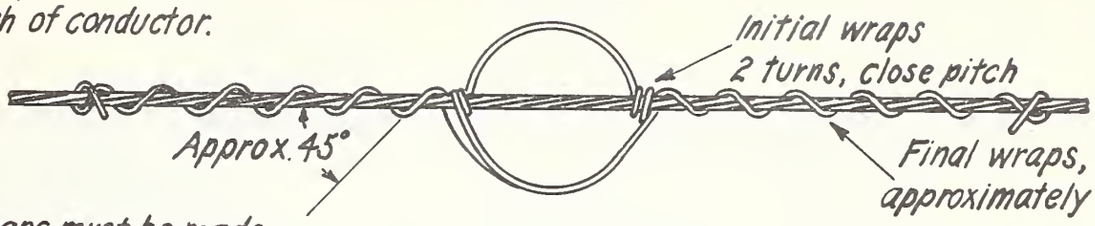
AT DOUBLE ARM ASSEMBLIES WITHOUT POLE TOP PINS

GUIDE FOR INSTALLATION OF GROUND WIRE ABOVE NEUTRAL ON POLES WITH BUTT-WRAPPED OR DRIVEN GROUNDS

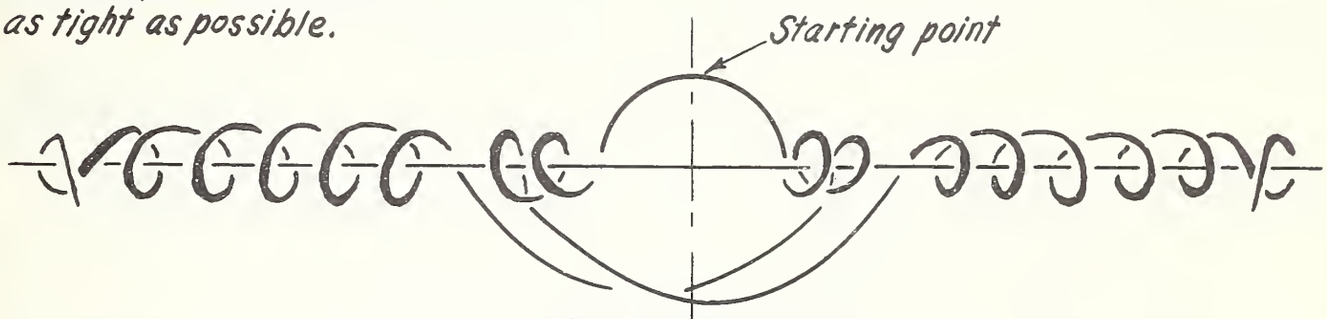
Scale: 3/8"=1'-0"		Date: April 12, 1956
		M 30-2

Tight wrap; cut end off within ½ inch of conductor.

TOP TIE

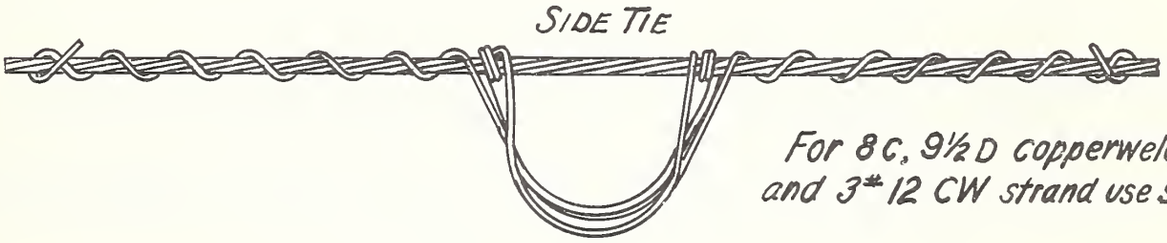


All wraps must be made as tight as possible.

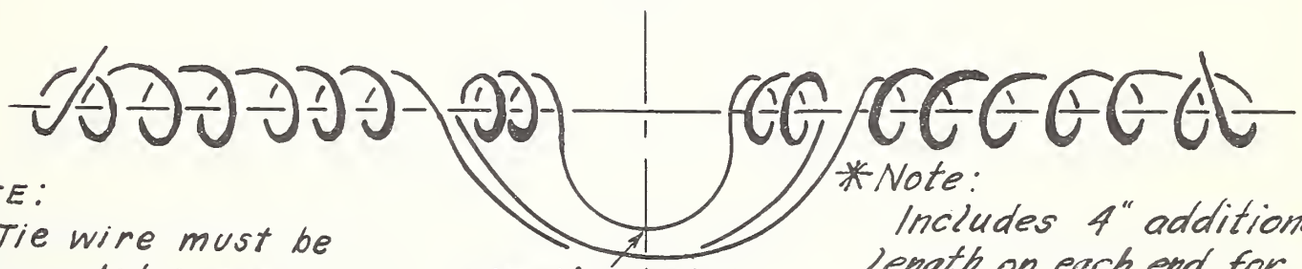


TOP TIE DETAIL VIEW

SIDE TIE



For 8C, 9½D copperweld-copper and 3#12 CW strand use same as 8A C.W.



NOTE:
Tie wire must be annealed copper.

Starting point

SIDE TIE DETAIL VIEW

*Note:
Includes 4" additional length on each end for convenience in applying tie.

CONDUCTOR	SIZE OF TIE WIRE AWG.	LENGTH OF TIE WIRE INCHES *	
		TOP TIE	SIDE TIE
3/0-7 Strand HD Copper	4	60	66
2/0-7 Strand HD Copper	4	58	64
1/0-7 Strand HD Copper	4	56	62
2-3 Strand Copper	6	54	60
4A Copperweld-Copper	6	52	58
4 Copper Wire	6	50	56
6 Copper Wire	8	46	52
6A Copperweld-Copper	8	46	52
8A & 8D Copperweld-Copper	8	44	50

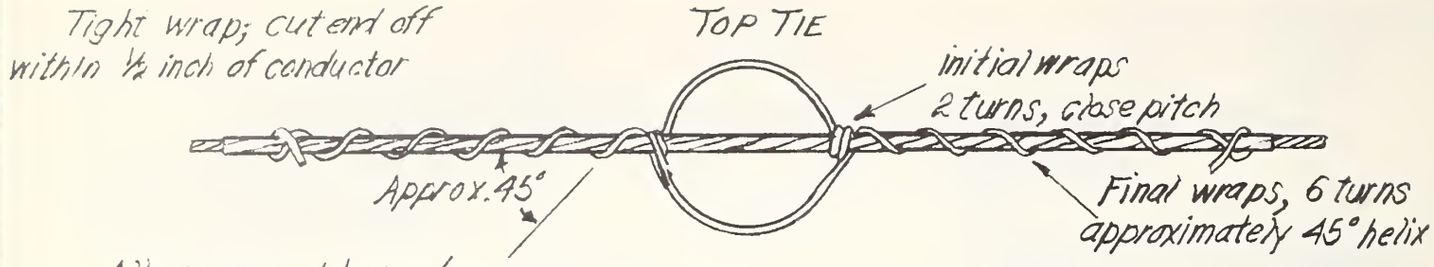
TYING GUIDE, SINGLE INSULATOR COPPER AND COPPERWELD-COPPER

Scale: N.T.S.

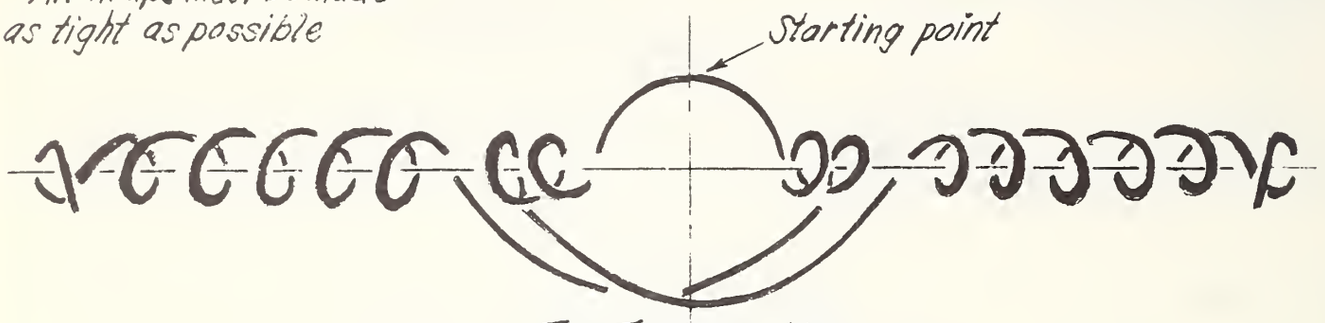
Date: June 8, 1948

M40-1

NO.	REVISION	DATE
1	Reissued	8-56



All wraps must be made as tight as possible



TOP TIE DETAIL VIEW

For 8C, 9½D copperweld-copper and 3#12 CW strand use same as 8A C.W.

NOTE:
Tie wire must be annealed copper.

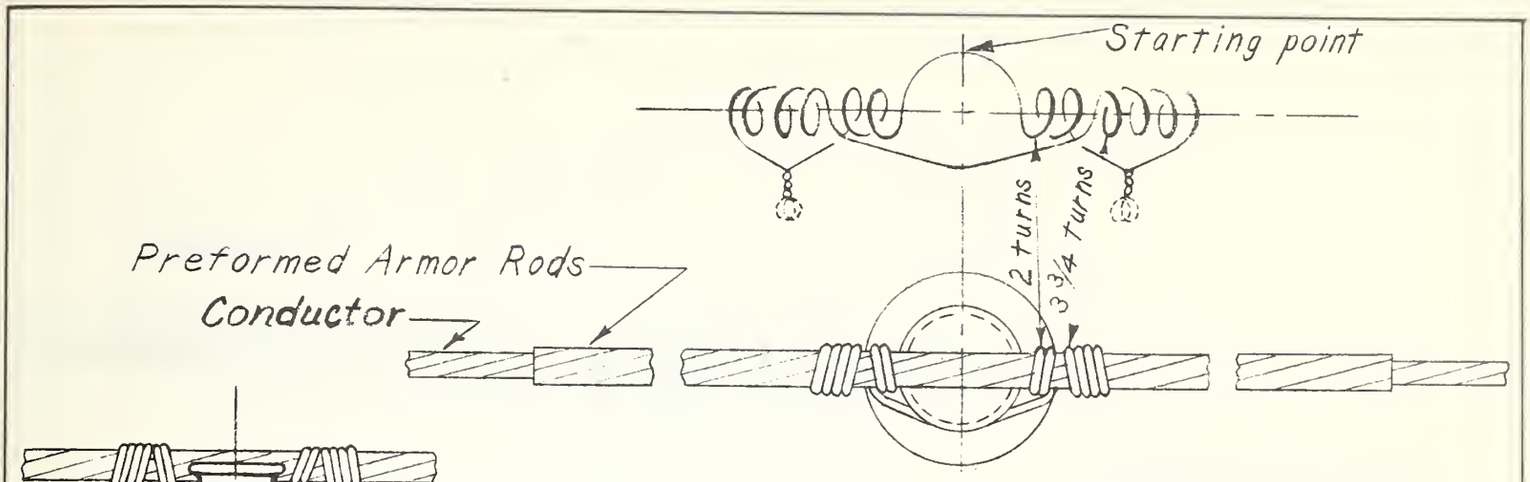
Starting point
SIDE TIE DETAIL VIEW

*Note:
Includes 4" additional length on each end for convenience in applying tie.

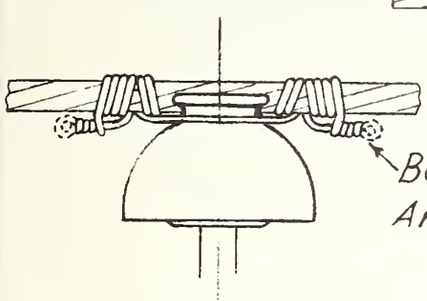
CONDUCTOR	CONDUCTOR DIAMETER	ARMOR ROD DIAMETER	OVERALL DIAMETER	SIZE OF COPPER TIE WIRE AWG.	TOP TIE *LENGTH	SIDE TIE *LENGTH
3/0-7 Strand HD copper	.464"	.162"	.788"	4	110"	116"
2/0-7 Strand HD copper	.414"	.162"	.738"	4	104"	110"
1/0-7 Strand HD copper	.368"	.128"	.624"	4	90"	96"
2-3 Strand copper	.320"	.128"	.576"	6	82"	88"
4A Copperweld-Copper	.290"	.102"	.494"	6	72"	78"
4 Copper wire	.204"	.102"	.408"	6	66"	72"
6 Copper wire	.162"	.102"	.366"	8	60"	66"
6A Copperweld-copper	.230"	.102"	.434"	8	65"	71"
8A & 8D Copperweld-Copper	.219"	.102"	.423"	8	64"	70"

TYING GUIDE, SINGLE INSULATOR.
ONE-PIECE TIE. COPPER TYPE CONDUCTORS WITH PREFORMED ARMOR RODS.

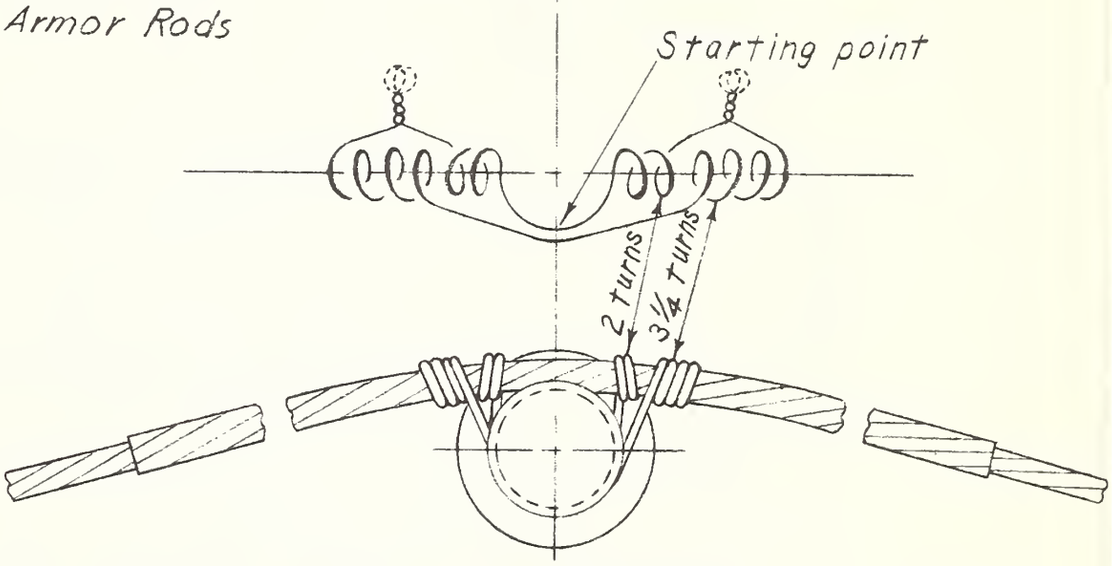
No.	REVISION	DATE:	Scale: N.T.S.		Feb. 17, 1953
1	Reissued	8-56			M40-1A



TOP GROOVE TIE



ELEVATION
TOP GROOVE TIE



SIDE GROOVE TIE

Note:

Tie wire assembly should be as tight as can be wrapped by hand, and ends twisted with pliers or hot line tools. Twist lefthand ends clockwise, righthand counterclockwise. With hot line loops, tie wires must be 8" longer than shown.

Tie wire lengths listed below can be used with insulators having a neck diameter up to and including 3½ inches.

For 8C, 9½D copperweld-copper and 3#12 CW strand use same as 8A CWC.

CONDUCTOR	CONDUCTOR DIAMETER	ARMOR ROD DIAMETER	OVERALL DIAMETER	ANNEALED COPPER TIE WIRE		
				SIZE	LENGTH SHORT PIECE	LENGTH LONG PIECE
3/0-7 Strand HD Copper	.464"	.162"	.788"	4	27"	40"
2/0-7 Strand HD Copper	.414"	.162"	.738"	4	27"	40"
1/0-7 Strand HD Copper	.368"	.128"	.624"	4	27"	40"
2-3 Strand Copper	.320"	.128"	.576"	6	23"	35"
4A Copperweld-Copper	.290"	.102"	.494"	6	23"	35"
4 Copper wire	.204"	.102"	.408"	6	23"	35"
6 Copper wire	.162"	.102"	.366"	8	21"	30"
6A Copperweld-Copper	.230"	.102"	.434"	8	21"	30"
8A and 8D Copperweld-Copper	.219	.102"	.423"	8	21"	30"

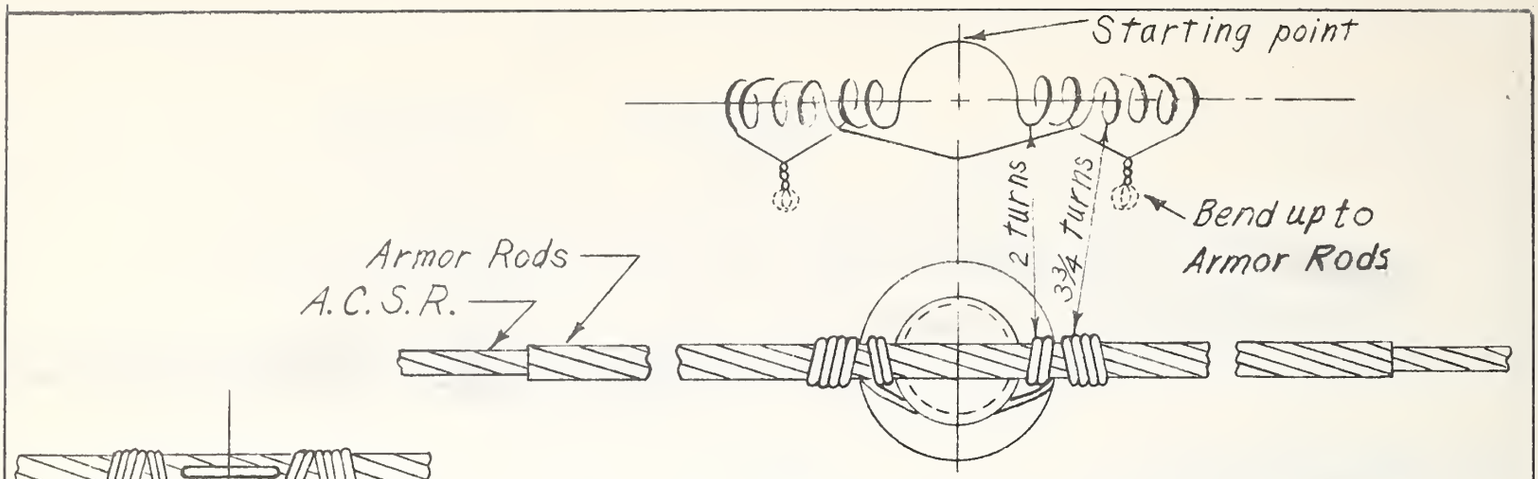
TYING GUIDE, SINGLE INSULATOR TWO-PIECE TIE. COPPER TYPE CONDUCTORS WITH PREFORMED ARMOR RODS

No.	REVISION	DATE
1	Reissued	8-56

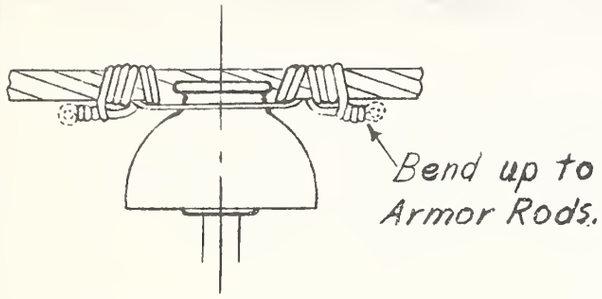
Scale: N.T.S.

Date: Feb. 17, 1953

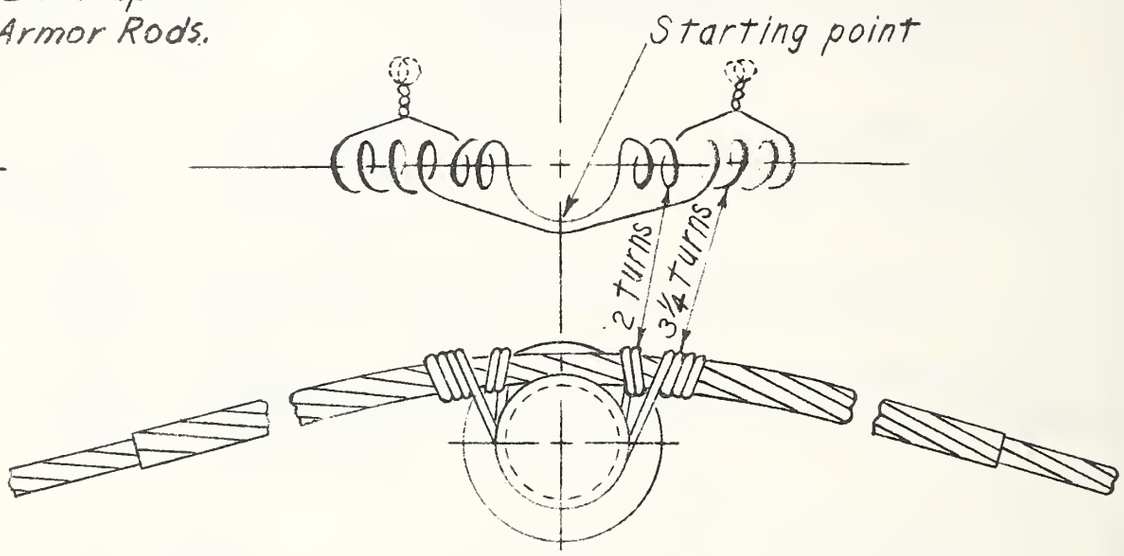
M40-1A2



TOP GROOVE TIE



ELEVATION
TOP GROOVE TIE



SIDE GROOVE TIE

Note:

Tie wire assembly should be as tight as can be wrapped by hand, and ends twisted with pliers or hot line tools. Twist lefthand ends clockwise, righthand counterclockwise. With hot line loops, tie wires must be 8" longer than shown.

Tie wire lengths listed below can be used with insulators having a neck diameter up to and including 3½ inches.

For installations of ACSR in locations where atmospheric corrosion is of major importance use galvanized soft steel tie wire with Class "B" coating as specified by engineer. In other cases use class "A" coating.

A.C.S.R.		Diam. over Armor Rods	Galv. Soft Steel Tie Wire		A.C.S.R.		Diam. over Armor Rods	Galv. Soft Steel Tie Wire	
Size	Cond. Diam.		Size BWG	Length Both Pieces	Size	Cond. Diam.		Size BWG	Length Both Pieces
4/0	.563	.927	10	39"	1	.355	.643	10	29"
3/0	.502	.836	10	39	2	.325	.604	11	27
2/0	.447	.781	10	31	4	.257	.545	12	25
1/0	.398	.732	10	31					

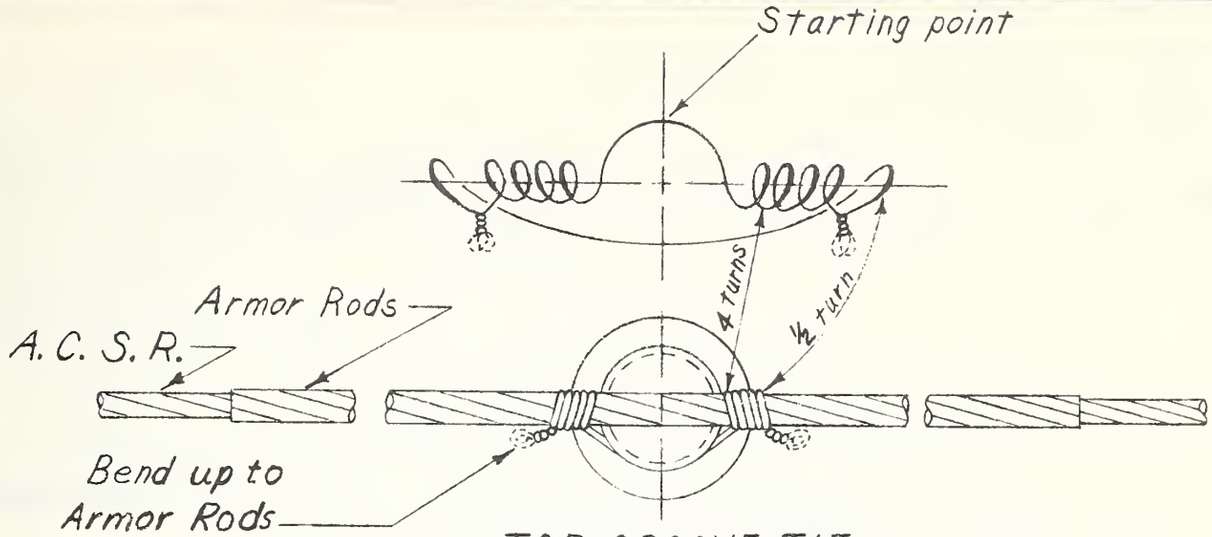
No.	REVISION	DATE
1	Reissued	8-56

TYING GUIDE, SINGLE INSULATOR
TWO-PIECE STEEL-WIRE TIE, A.C.S.R. CONDUCTOR
ALUMINUM ALLOY, STRAIGHT OR PREFORMED ARMOR RODS

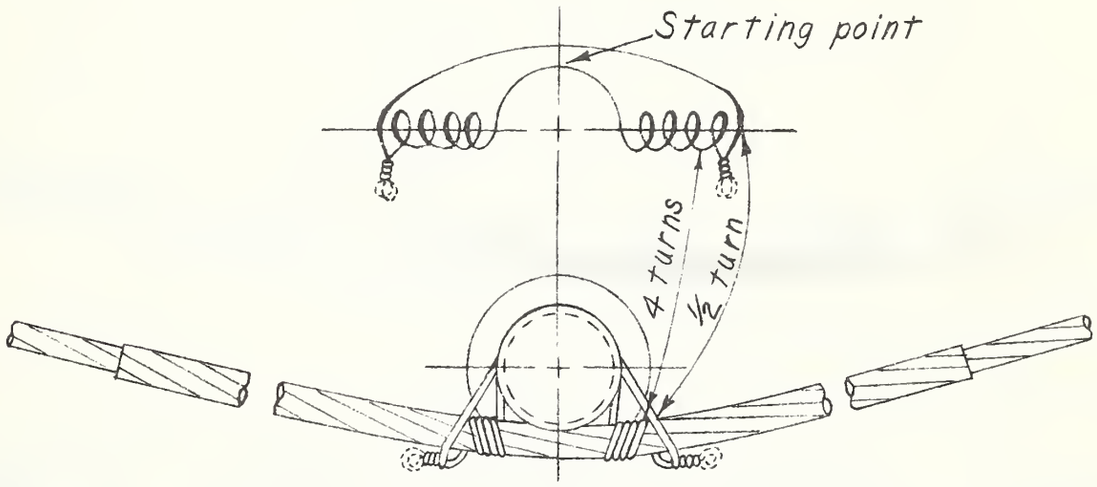
Scale: N.T.S.

Date: Feb. 17, 1953

M40-2



TOP GROOVE TIE



SIDE GROOVE TIE

NOTE:

Tie wire assembly should be as tight as can be wrapped and ends twisted with hot line tools. Twist lefthand ends clockwise, righthand counterclockwise.

Tie wire lengths listed below can be used with insulators having a neck diameter up to and including 3½ inches.

For installations of ACSR in locations where atmospheric corrosion is of major importance use galvanized soft steel tie wire with Class "B" coating as specified by engineer. In other cases use Class "A" coating.

A. C. S. R.		DIAM. OVER ARMOR RODS	GALV. SOFT STEEL TIE WIRE			A. C. S. R.		DIAM. OVER ARMOR RODS	GALV. SOFT STEEL TIE WIRE		
SIZE	COND. DIAM.		SIZE BWG	1st PIECE	2nd PIECE	SIZE	COND. DIAM.		SIZE BWG	1st PIECE	2nd PIECE
4/0	.563"	.927"	10	42"	23"	1	.355"	.643"	10	35"	22"
3/0	.502	.836	10	40	23	2	.325	.604	11	34	22
2/0	.447	.781	10	39	23	4	.257	.545	12	32	22
1/0	.398	.732	10	38	23						

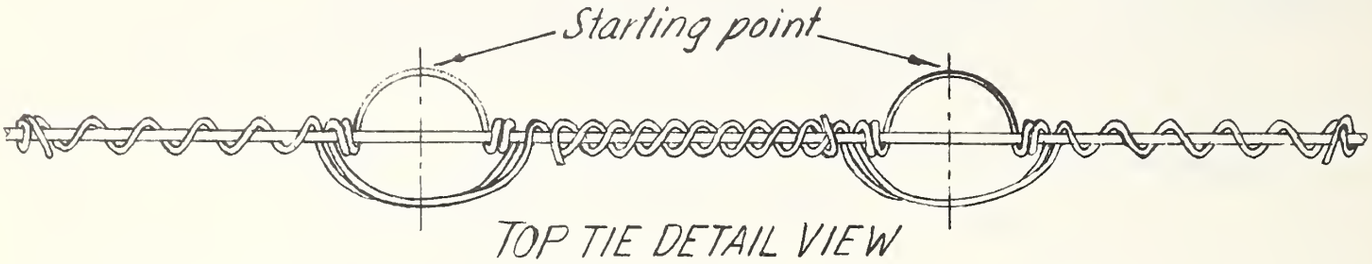
HOT LINE TYING GUIDE, SINGLE INSULATOR
TWO-PIECE STEEL-WIRE TIE, A.C.S.R. CONDUCTOR
ALUMINUM ALLOY, STRAIGHT OR PREFORMED ARMOR RODS

No.	REVISION	DATE
1	Reissued	8-56.

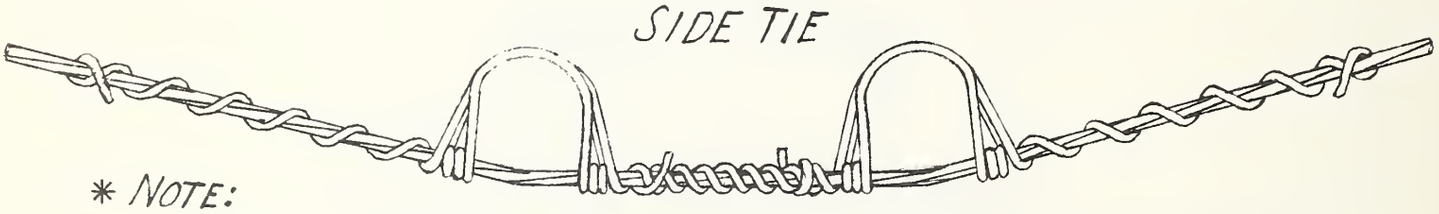
Scale: N.T.S.

Date: Feb. 17, 1953

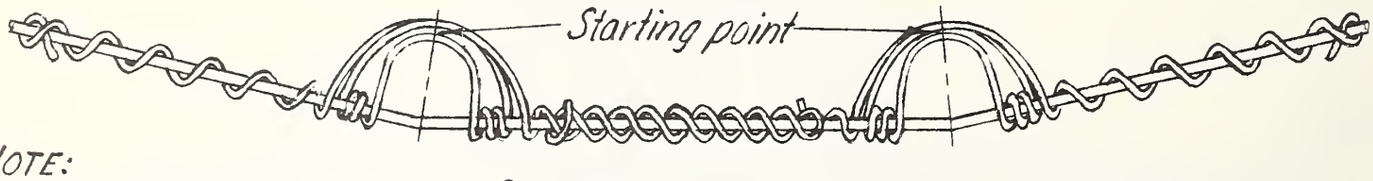
M40-6



TOP TIE DETAIL VIEW



* NOTE:
Includes 4" additional length on each end for convenience in applying tie.



NOTE:
Tie wire must be annealed copper

SIDE TIE DETAIL VIEW

For 8C, 9½ D copperweld-copper and 3#12 CW strand use same as 8A C.W.

CONDUCTOR	SIZE OF TIE WIRE AWG.	LENGTH OF TIE WIRE INCHES *	
		TOP TIE	SIDE TIE
3/0 - 7 Strand HD copper	4	60	66
2/0 - 7 Strand HD copper	4	58	64
1/0 - 7 Strand HD copper	4	56	62
2 - 3 Strand Copper	6	54	60
4A Copperweld-Copper	6	52	58
4 Copper Wire	6	50	56
6 Copper Wire	8	46	52
6A Copperweld-Copper	8	44	50
8A and 8D Copperweld-copper	8	44	50

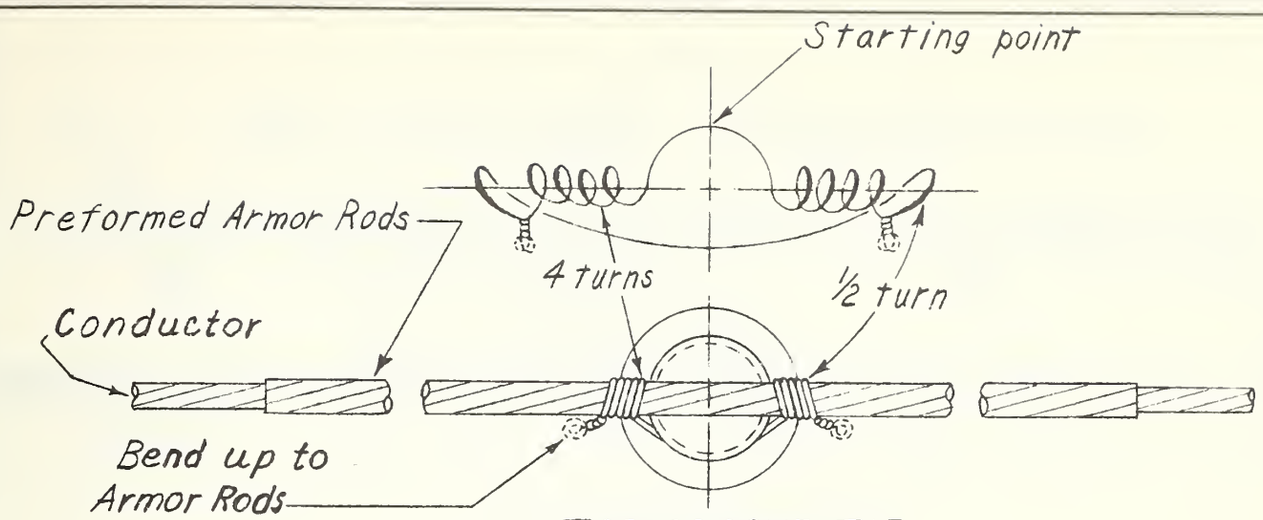
TYING GUIDE, DOUBLE INSULATOR COPPER TYPE CONDUCTORS

No.	REVISION	Date:
1	Reissued	8-56

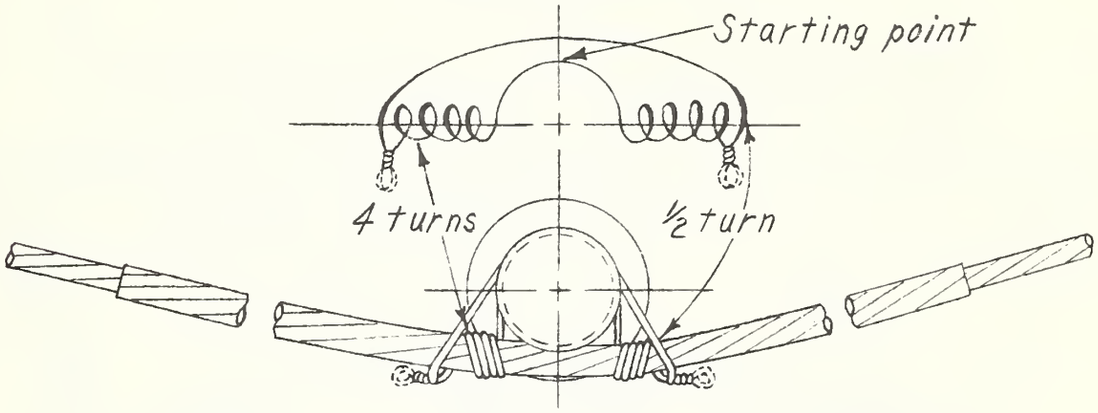
Scale: N.T.S.

Date: Feb. 17, 1953

M40-7



TOP GROOVE TIE



SIDE GROOVE TIE

NOTE:

Tie wire assembly should be as tight as can be wrapped and ends twisted with hot line tools. Twist lefthand ends clockwise, righthand counterclockwise.

Tie wire lengths listed below can be used with insulators having a neck diameter up to and including 3½ inches.

For 8C, 9½D copperweld-copper and 3#12 CW strand use same as 8A.

COPPERWELD COPPER		DIAM. OVER ARMOR RODS	ANNEALED COPPER TIE WIRE			COPPER		DIAM. OVER ARMOR RODS	ANNEALED COPPER TIE WIRE		
SIZE	COND. DIAM.		SIZE AWG	1st PIECE	2nd PIECE	SIZE	COND. DIAM.		SIZE AWG	1st PIECE	2nd PIECE
2F	.308"	.560"	6	34"	24"	4/0-7w	.522"	.846"	6	38"	29"
2A	.366	.622	6	36	24	3/0-7w	.464	.788	6	37	28
3A	.326	.582	6	34	24	2/0-7w	.414	.738	6	37	28
4A	.290	.494	6	33	24	1/0-7w	.368	.624	6	36	27
5A	.258	.462	6	33	24	2-3w	.320	.576	6	34	25
6A	.230	.434	8	32	23	2-Sol.	.258	.462	6	33	24
7A	.223	.427	8	32	23	4-Sol.	.204	.408	6	32	23
8A	.199	.403	8	31	23	6-Sol.	.162	.366	8	30	22

HOT LINE TYING GUIDE

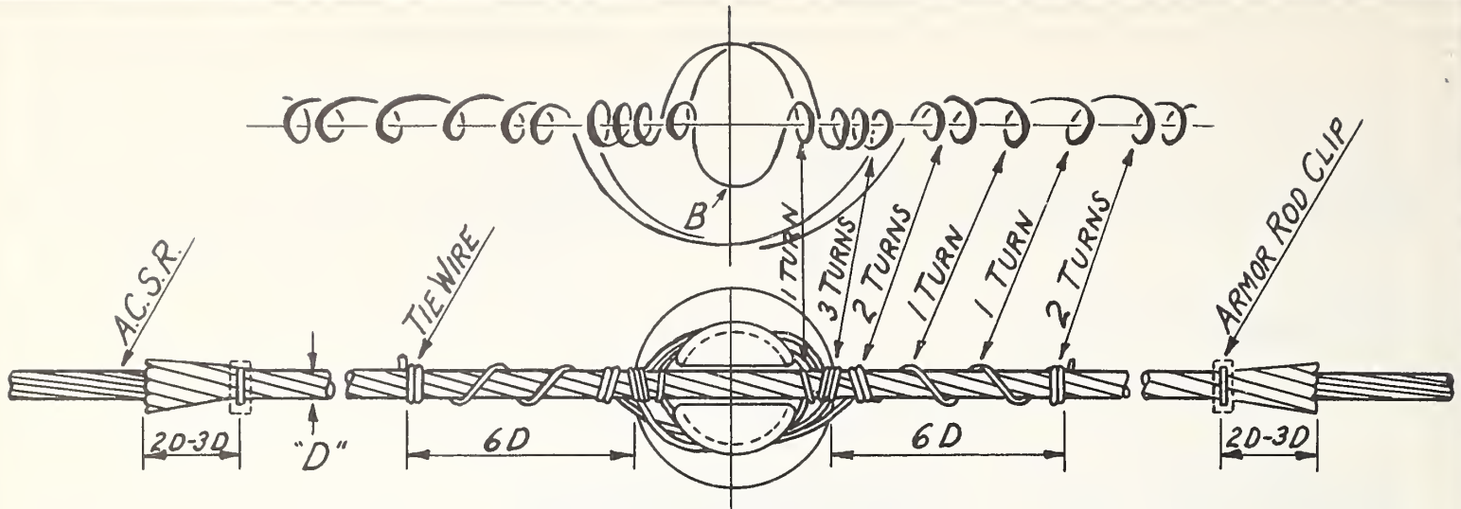
COPPER TYPE CONDUCTORS WITH PREFORMED ARMOR RODS

No.	REVISION	DATE
1	Reissued	8-56

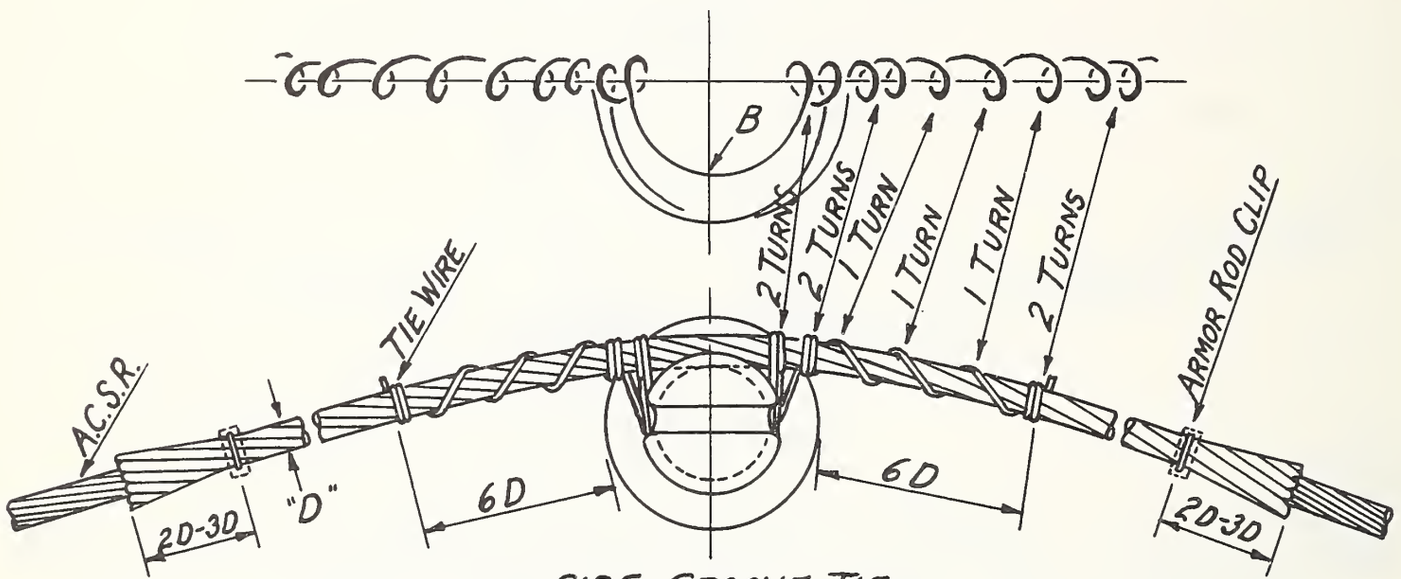
Scale: N.T.S.

Date: Feb. 17, 1953

M40-8



TOP GROOVE DOUBLE TIE



SIDE GROOVE TIE

NOTE:

In making ties, start with middle of length of tie wire at position marked "B."

To complete tie, cinch up last two turns at each end with pliers until tie wire is snug and tight. Use the flat face of the pliers against the armor rods.

A.C.S.R.		ARMOR RODS	TIE WIRE ALUMINUM		A.C.S.R.		ARMOR RODS	TIE WIRE ALUMINUM ALLOY	
SIZE	DIAM. INCHES	"D" DIAM. INCHES	SIZE	LENGTH FEET	SIZE	DIAM. INCHES	"D" DIAM. INCHES	SIZE	LENGTH FEET
4/0	0.563	0.939	4	9' 3"	1/0	0.398	0.744	6	8' 3"
3/0	0.502	0.836	4	8' 9"	2	0.325	0.595	6	7' 5"
2/0	0.447	0.745	4	8' 3"	4	0.257	0.555	6	7' 3"

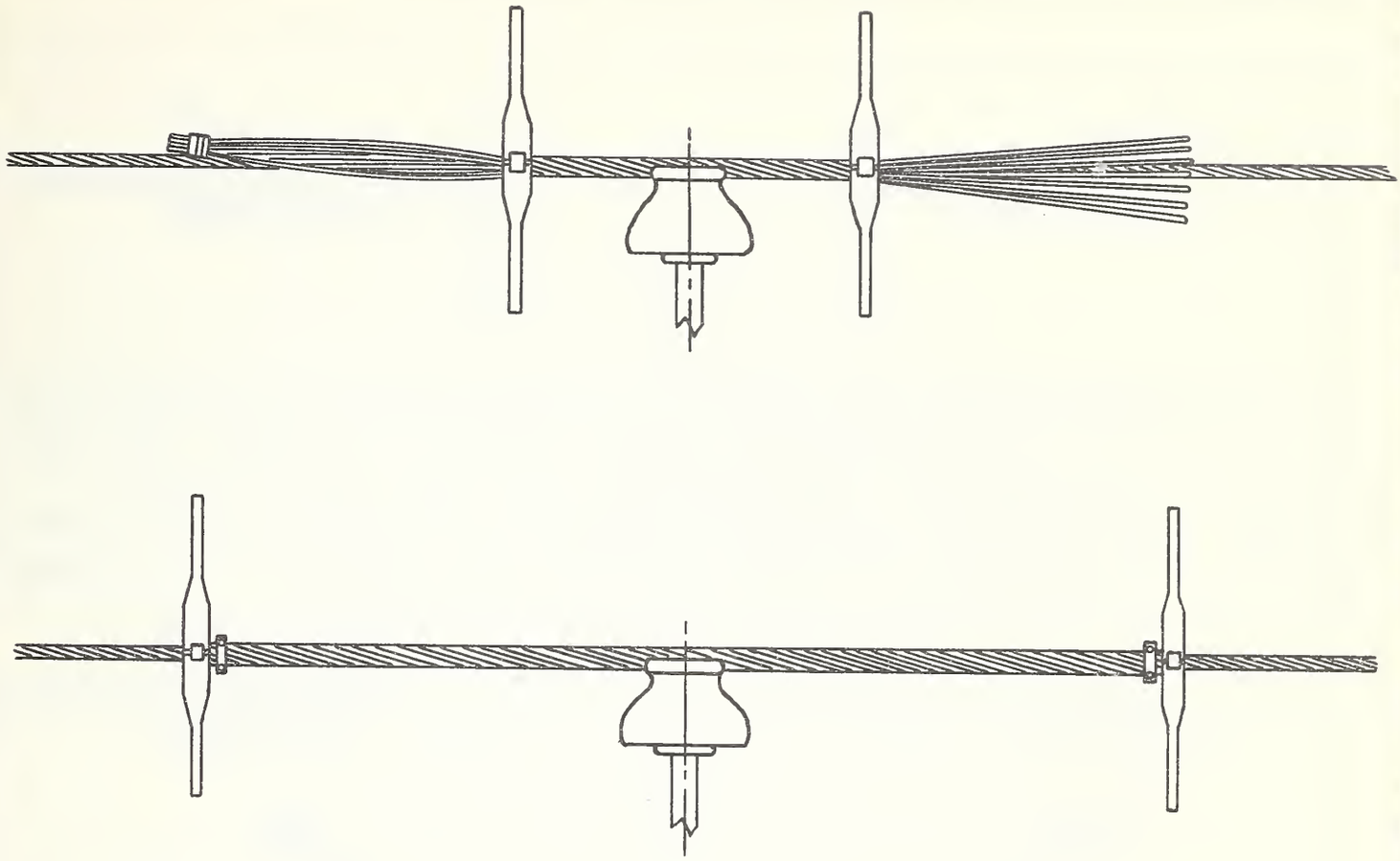
TYING GUIDE, SINGLE INSULATOR
ALUMINUM AND ALUMINUM ALLOY TIE WIRE, ACSR CONDUCTOR
ALUMINUM ALLOY, STRAIGHT OR PREFORMED ARMOR RODS

No.	REVISION	DATE
2	Reissued	8-56
1	Revised	2-17-53

Scale: N.T.S.

Date: June 8, 1948

M40-10



NOTE:

With tape still on one end of rods and other end threaded through wrenches so they open between the same two rods, center on conductor over point of support and close around conductor as shown above. Twist rods enough to give permanent set. Remove tape and slide wrenches half way to ends and repeat. Move wrenches to end of rods and twist. Attach clips and tighten before removing wrenches so ends of rods will flare after removal. Rods should be twisted snugly with a smooth lay in same direction as lay of conductor. For further information and method of installing rods on angle see manufacturer's Suggestions for Construction, A.C.S.R. Rural Lines.

CONDUCTOR SIZE	SUPPORT	
	SINGLE	DOUBLE
	TWISTS	
#4 A.C.S.R. (6Al/1St.) & (7Al/1St.)	5-6	7-8
#2 A.C.S.R. (6Al/1St.) & (7Al/1St.)	6-7	8-9
#1/0 A.C.S.R. (6Al/1St.)	4-5	6-7
#2/0 A.C.S.R. (6Al/1St.)	5-6	7-8
#3/0 A.C.S.R. (6Al/1St.)	5-6	7-8
#4/0 A.C.S.R. (6Al/1St.)	5-6	7-8

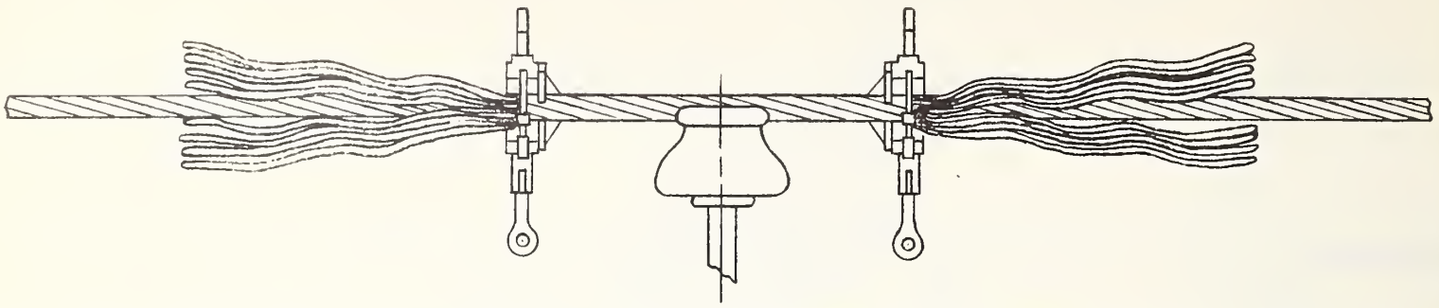
ARMOR RODS
A.C.S.R. CONDUCTOR

NO.	REVISION	DATE
1	Reissued	8-56

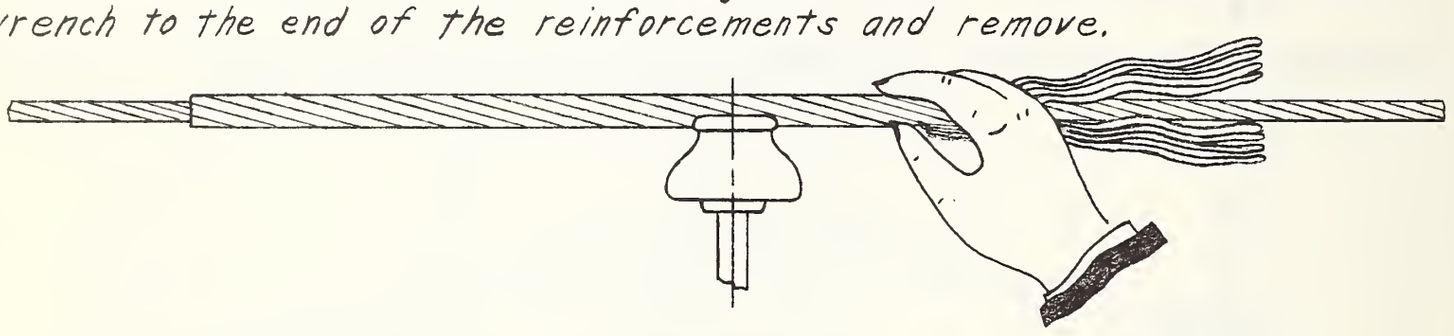
Scale: N.T.S.

Date: June 11, 1948

M40-11



For tool application, insert half the reinforcements in one cavity and the other half in the other cavity of the open wrenches, keeping the ends even. Hook wrenches over the conductor and close jaws. Space wrenches approximately one reinforcement pitch apart and twist them in the same direction as the lay of the conductor. Wind each wrench to the end of the reinforcements and remove.



For hand application, hold one or more reinforcements against the conductor with midpoint at the insulator, and rotate in same direction as the lay of the conductor, for three or four inches each side of center. In like manner apply remaining reinforcements to center section. After all have been started, complete the application by a rotary outward wiping motion of the hand. Make certain that the ends snap into place in proper order.

PREFORMED ALUMINUM ALLOY ARMOR RODS

A.C.S.R.	LENGTH SINGLE SUPPORT	LENGTH DOUBLE SUPPORT	NO. PER SET	WIRE DIAM. (IN.)	DIAM. PLUS RODS	A.C.S.R.	LENGTH SINGLE SUPPORT	LENGTH DOUBLE SUPPORT	NO. PER SET	WIRE DIAM. (IN.)	DIAM. PLUS RODS
4/0(6x1)	60"	72"	11"	.182	.927	2 (7x1)	44"	56"	9	.146	.613
3/0(6x1)	56	68	11	.167	.836	2 (6x1)	44	56	9	.146	.604
2/0(6x1)	54	66	10	.167	.781	4 (7x1)	40	52	7	.146	.545
1/0(6x1)	52	64	9.	.167	.732	4 (6x1)	40	52	7	.146	.538
1 (6x1)	48	60	9	.146	.643						

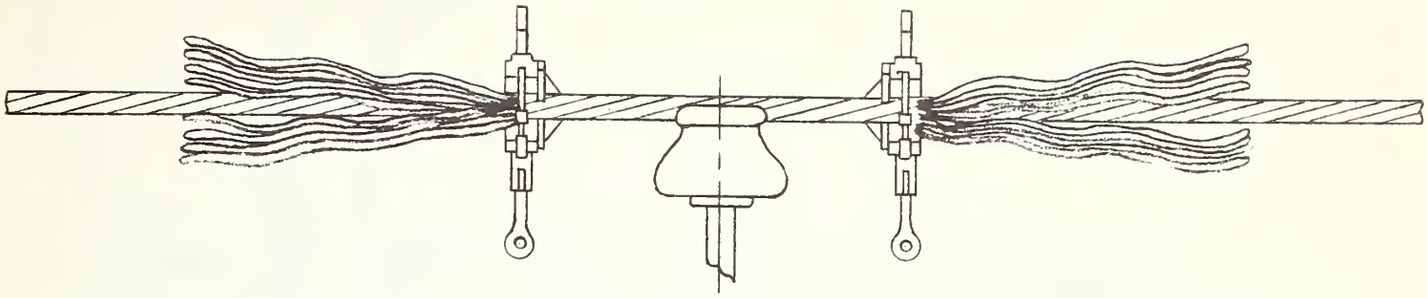
PREFORMED ARMOR RODS
A.C.S.R. CONDUCTORS

NO.	REVISION	DATE
1	Reissued	8-56

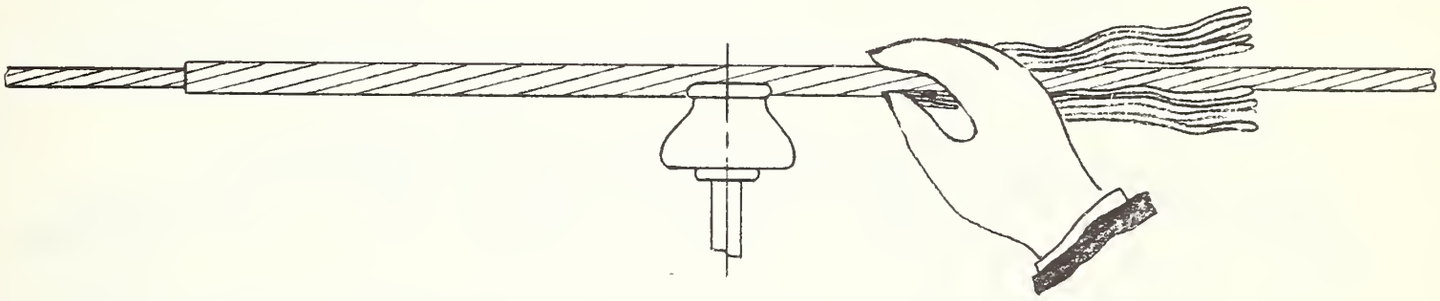
Scale: N.T.S.

DATE: July 13, 1948

M40-12



For tool application, insert half the reinforcements in one cavity and the other half in the other cavity of the open wrenches, keeping the ends even. Hook wrenches over the conductor and close jaws. Space wrenches approximately one reinforcement pitch apart and twist them in the same direction as the lay of the conductor. Wind each wrench to the end of the reinforcements and remove.



For hand application, hold one or more reinforcements against the conductor with midpoint at the insulator, and rotate in same direction as the lay of the conductor, for three or four inches each side of center. In like manner apply remaining reinforcements to center section. After all have been started, complete the application by a rotary outward wiping motion of the hand. Make certain that the ends snap into place in proper order.

If lay of conductor is right-hand instead of as indicated, special armor rods should be obtained with the same lay.

PREFORMED BRONZE OR COPPER TYPE ARMOR RODS

CONDUCTOR	LENGTH SINGLE SUPPORT	LENGTH DOUBLE SUPPORT	NO. PER SET	WIRE DIAM. (IN)	DIAM. PLUS RODS	CONDUCTOR	LENGTH SINGLE SUPPORT	LENGTH DOUBLE SUPPORT	NO. PER SET	WIRE DIAM. (IN.)	DIAM. PLUS RODS
3/0x7	56"	68"	11	.162	.788	4 Solid	40"	52"	8	.102	.408
2/0x7	56"	68"	10	.162	.738	6 Solid	40"	52"	7	.102	.366
1/0x7	50"	62"	10	.128	.624	6 A. CWC	40"	52"	9	.102	.434
2x3	46"	58"	9	.128	.576	8 A. CWC	40"	52"	8	.102	.403
4 A CWC	42"	54"	10	.102	.494						

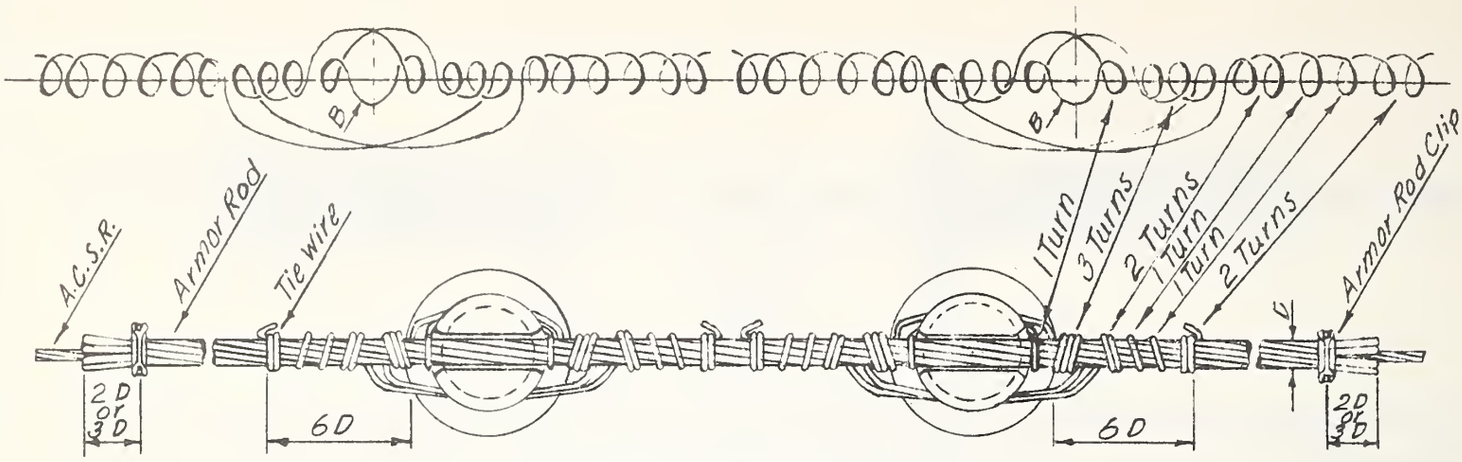
PREFORMED ARMOR RODS COPPER TYPE CONDUCTORS

NO.	REVISION	DATE
1	Reissued	8-56

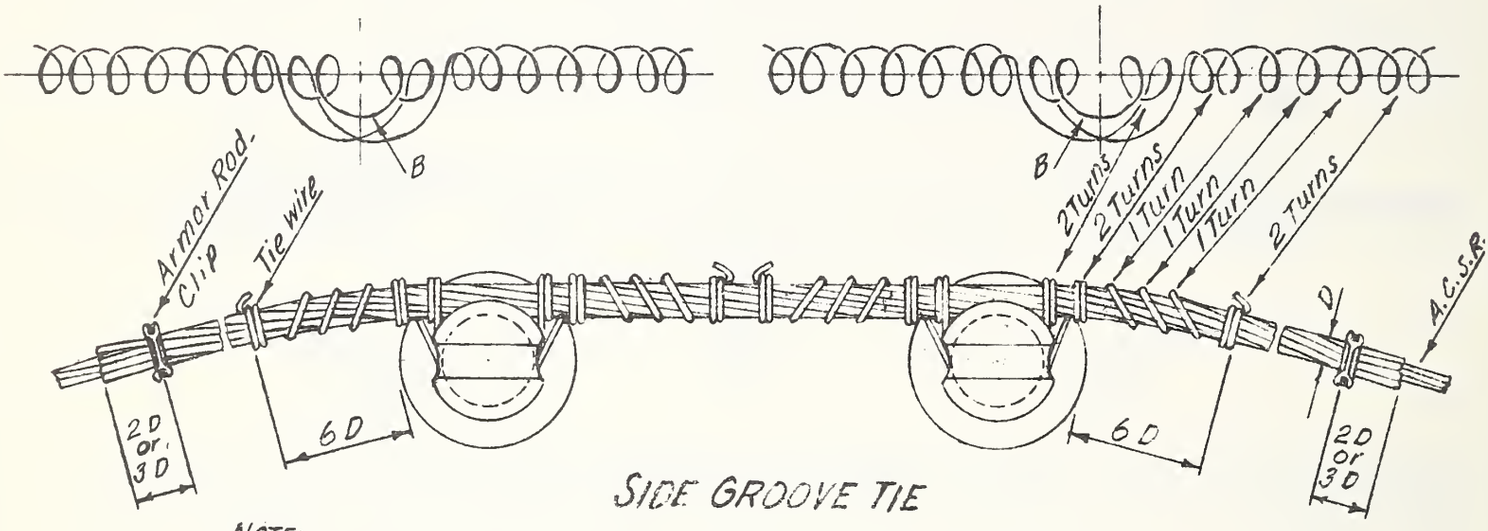
Scale: N.T.S.

DATE: Feb. 17, 1953.

M40-13



TOP GROOVE DOUBLE TIE



SIDE GROOVE TIE

NOTE:

In making ties, start with middle of length of tie wire at position marked "B".

To complete tie, cinch up last two turns at each end with pliers until tie wire is snug and tight.

Use the flat face of the pliers against the armor rods.

A.C.S.R.		ARMOR RODS	TIE WIRE Strong Alloy		A.C.S.R.		ARMOR RODS	TIE WIRE Strong Alloy	
SIZE	DIAM. INCHES	"D" DIAM. INCHES	SIZE	LENGTH FEET	SIZE	DIAM. INCHES	"D" DIAM. INCHES	SIZE	LENGTH FEET
4/0	0.563	0.939	4	9'-3"	1/0	0.398	0.744	6	8'-3"
3/0	0.502	0.836	4	8'-9"	2	0.325	0.595	6	7'-5"
2/0	0.447	0.745	4	8'-3"	4	0.257	0.555	6	7'-3"

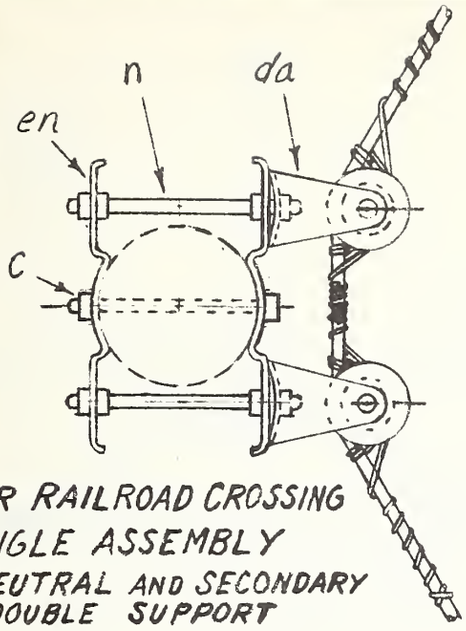
TYING GUIDE, DOUBLE INSULATOR ALUMINUM ALLOY TIE WIRE, A.C.S.R. CONDUCTOR ALUMINUM ALLOY, STRAIGHT OR PREFORMED ARMOR RODS

No.	REVISION	DATE:
1	Reissued	8-56

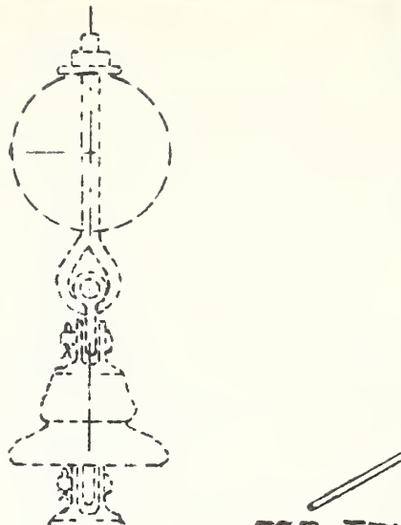
Scale: N.T.S.

DATE. Feb. 17, 1953

M40-17



FOR RAILROAD CROSSING
ANGLE ASSEMBLY
NEUTRAL AND SECONDARY
DOUBLE SUPPORT

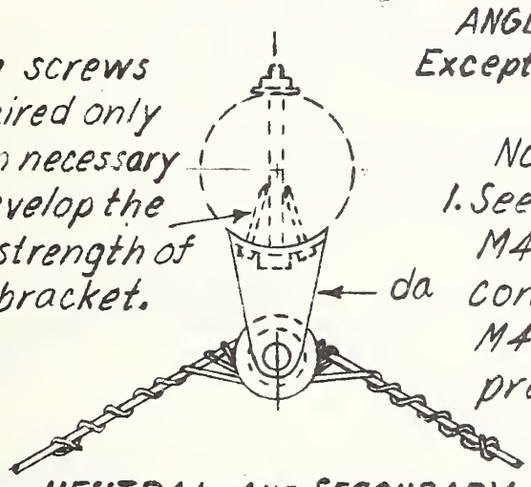


FOR TELEPHONE CROSSING
ANGLE ASSEMBLY "cd"
with 2-bolt suspension Clamp

Use suspension clamp item "m" for conductors with armor rods exceeding 3/4" overall diameter.

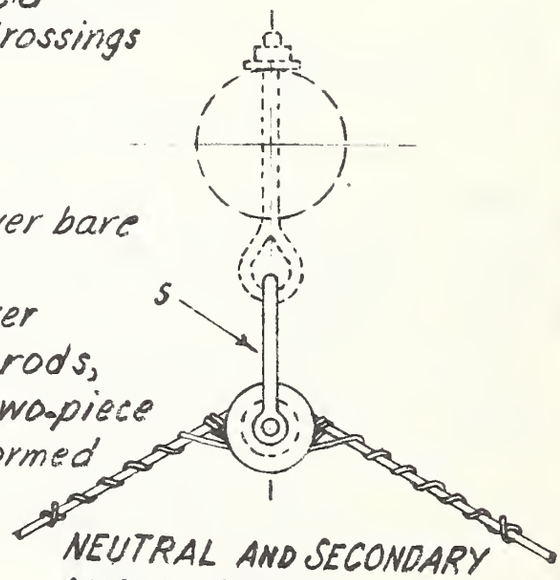
PRIMARY
ANGLE ASSEMBLY "cd"
Except at Telephone Crossings

Lag screws required only when necessary to develop the full strength of the bracket.



NEUTRAL AND SECONDARY
PREFERRED ASSEMBLY
Except at Railroad Crossings

NOTES:
1. See tying guides:
M40-1 for ties over bare conductor,
M40-1A for ties over preformed armor rods,
M40-1A2 for two-piece ties over preformed armor rods.



NEUTRAL AND SECONDARY
ANGLE ASSEMBLY "ce"
Except at Railroad Crossings

NOTE 2. Armor rods;
See M40-13 for preformed armor rods over copper type conductors.

ITEM	NO. REQD.	MATERIAL		ITEM	NO. REQD.	MATERIAL	
c		Bolt, machine, 5/8" x req'd. lgth.		bo		Shackle, anchor	
m		Clamp, suspension		da		Bracket, insulated	
n		Bolt, double arming		ci		Clevis, thimble, side opening	
s		Clevis, secondary, swinging, insulated		en		Plates, double support	

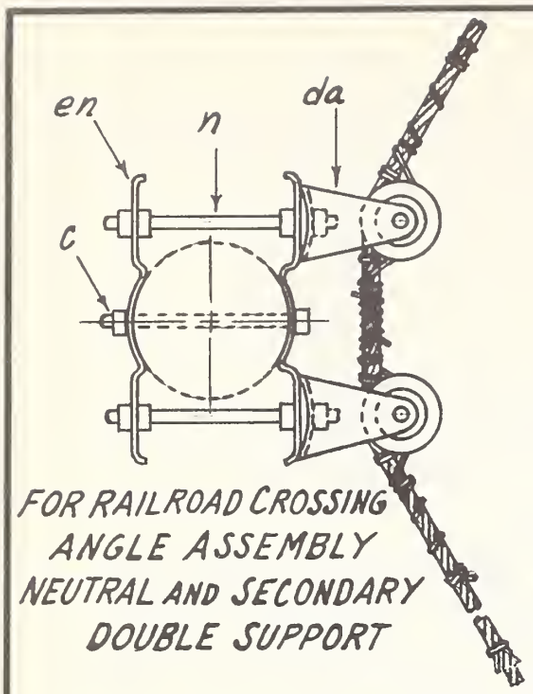
ANGLE ASSEMBLY GUIDE, VERTICAL CONSTR. 30° TO 60° ANGLE
COPPER TYPE CONDUCTORS
WITH OR WITHOUT PREFORMED ARMOR RODS

No.	REVISION	DATE
1	Reissued	8-56

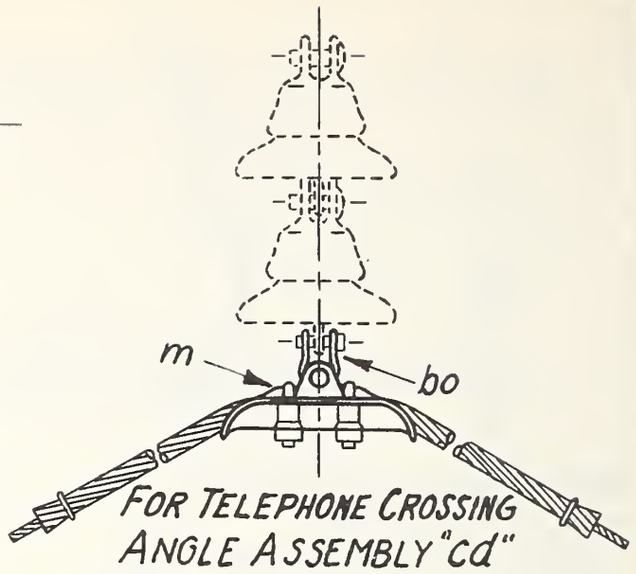
Scale: 1½"=1'-0"

Date. Feb. 17, 1953

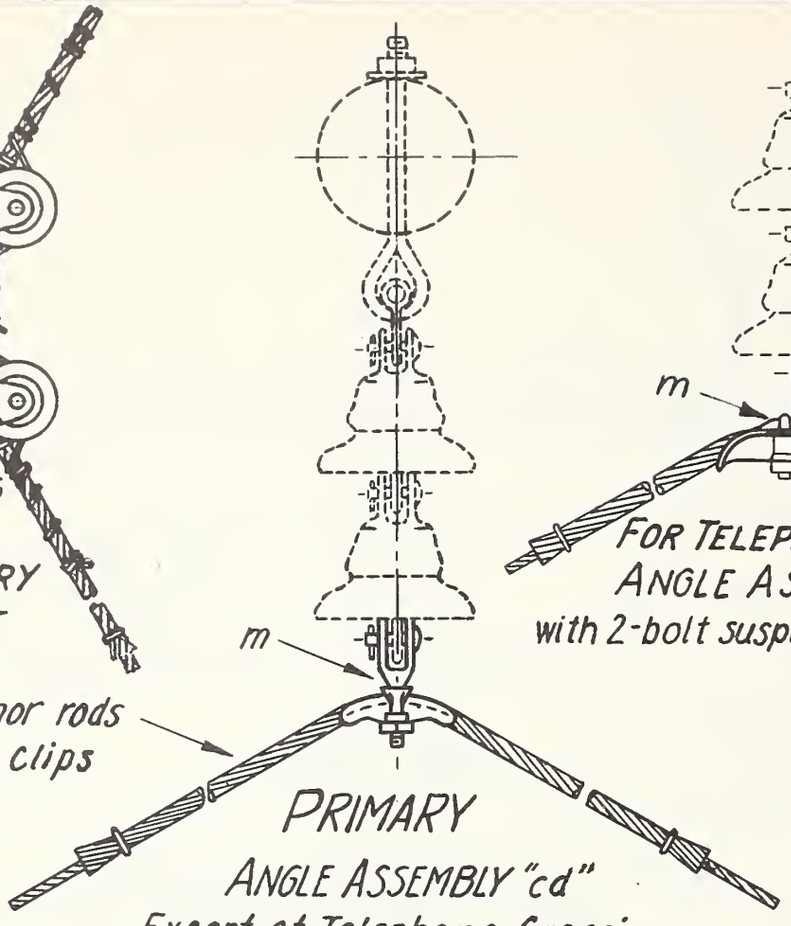
M41-1



FOR RAILROAD CROSSING
ANGLE ASSEMBLY
NEUTRAL AND SECONDARY
DOUBLE SUPPORT



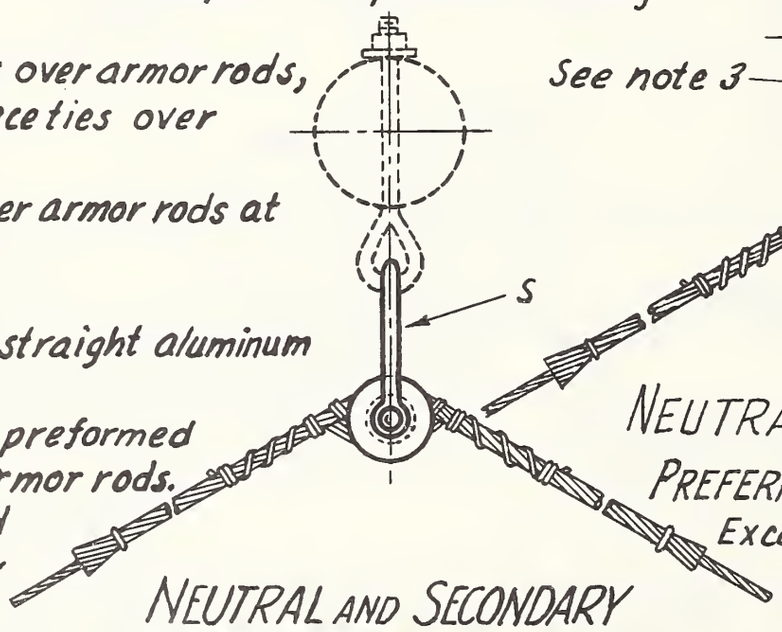
FOR TELEPHONE CROSSING
ANGLE ASSEMBLY "cd"
with 2-bolt suspension clamp



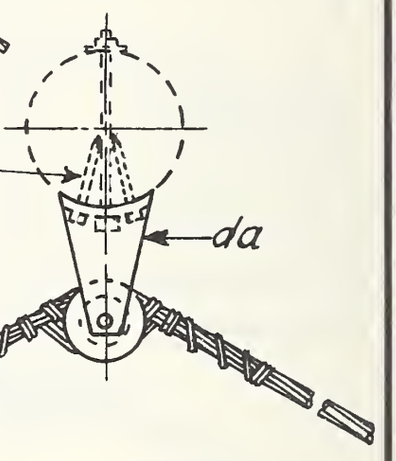
PRIMARY
ANGLE ASSEMBLY "cd"
Except at Telephone Crossings

NOTES:

1. See tying guides;
M40-10 for ties over armor rods,
M40-2 for two-piece ties over armor rods.
M40-17 for ties over armor rods at double insulator.
2. Armor Rods;
See M40-11 for straight aluminum armor rods.
See M40-12 for preformed aluminum alloy armor rods.
3. Lag screws required only when necessary to develop the full strength of the bracket.



NEUTRAL AND SECONDARY
ANGLE ASSEMBLY "ce"
Except at Railroad Crossings



NEUTRAL AND SECONDARY
PREFERRED ASSEMBLY
Except at Railroad Crossings

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
c		Bolt, machine, 5/8" x req'd. lg'th.		n		Bolt, double arming	
				en		Plates, double support	
m		Clamp, suspension		bo		Shackle, anchor	
s		Clevis, secondary, swinging, insulated		da		Bracket, insulated	

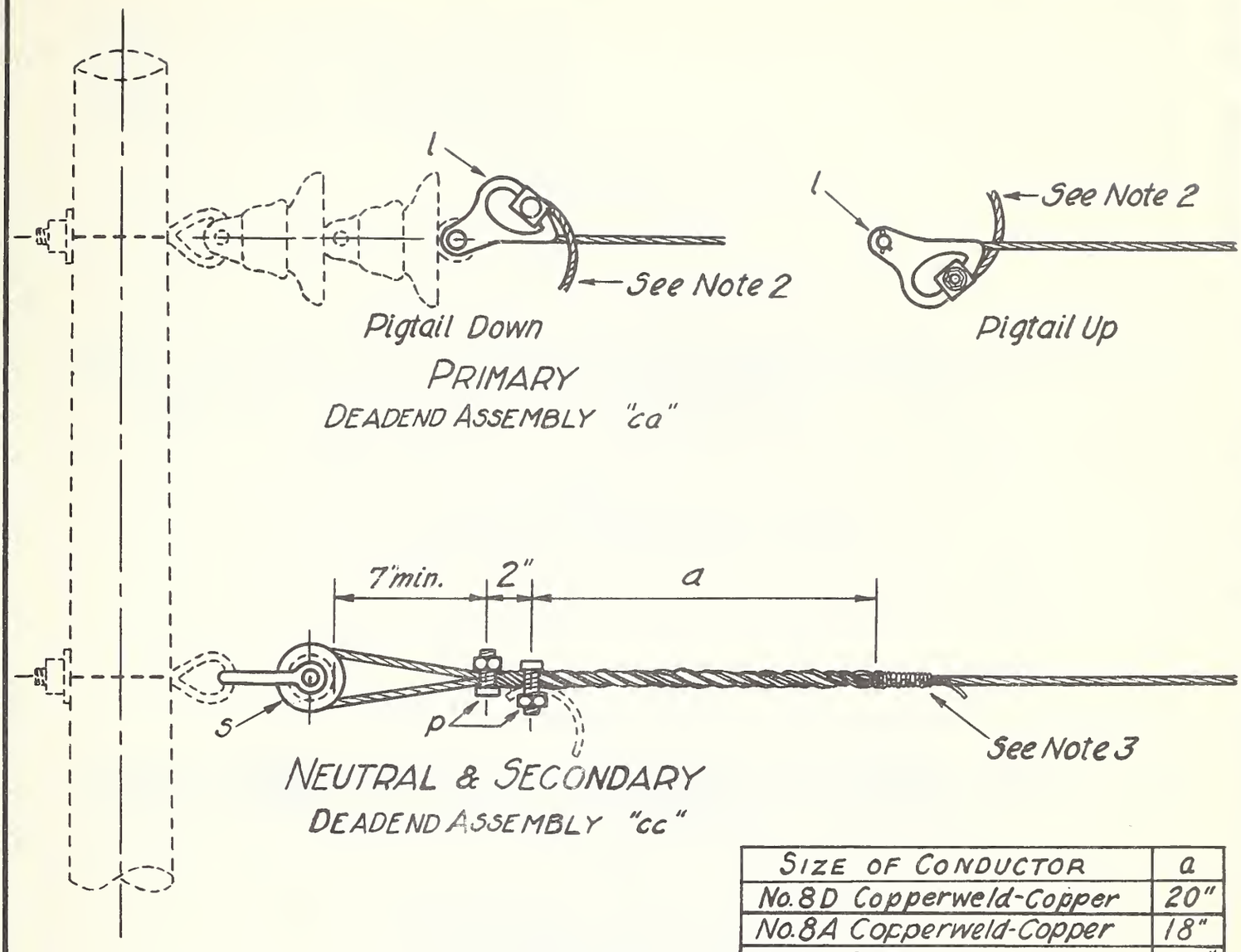
ANGLE ASSEMBLY GUIDE, VERTICAL CONSTR.-30° TO 60° ANGLE
ACSR CONDUCTORS WITH STRAIGHT OR PREFORMED ARMOR RODS

Nº	REVISION	DATE
1	Reissued	8-56

Scale: 1½"=1'-0"

Date: Feb. 17, 1953

M41-10



SIZE OF CONDUCTOR	a
No.8D Copperweld-Copper	20"
No.8A Copperweld-Copper	18"
No.6A Copperweld-Copper	20"
No.4A Copperweld-Copper	22"
No.2 Copper, 3-Strand	22"

Notes:

1.- For alternate method of deadending primary conductors, see Drawing M 42-21

2.- Bend pigtail away from line conductor to avoid chafing.

3.- Wrap free end of conductor along line conductor using same lay. Extend one strand of free end (for copperweld-copper this is the copperweld strand) against line conductor. Serve the other two strands six turns each and cut them off. (Always serve copper strand (s) first.) Bend extended strand away from line conductor and cut off.

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
l		Clamp, deadend		s		Clevis, secondary, swinging, insulated	
p		Connectors, as req'd.					

DEADEND ASSEMBLY GUIDE-DEADEND CLAMP METHOD
COPPERWELD-COPPER & STRANDED COPPER CONDUCTORS

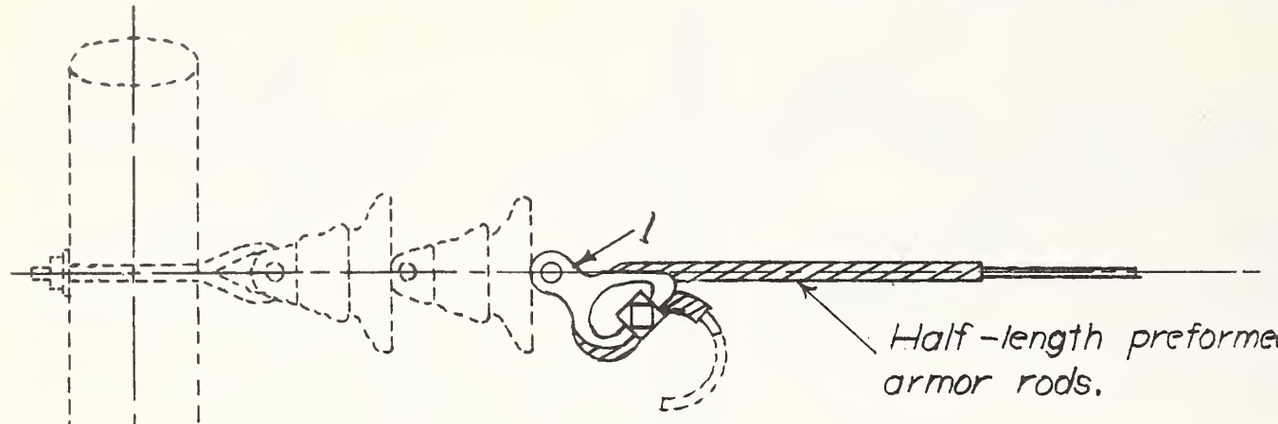
Scale 1½"=1'0"

Date: June 8, 1948

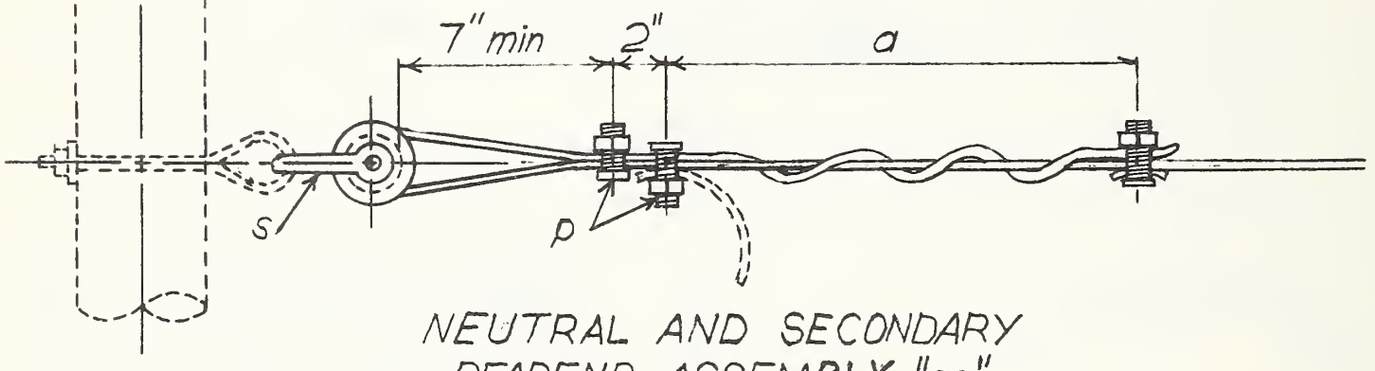
M42-3

NO.	REVISION	DATE
1	Reissued	8-56

Size of Conductor	a
No. 6 Copper	18"
No. 4 Copper	20"



PRIMARY DEADEND ASSEMBLY "ca"



NEUTRAL AND SECONDARY DEADEND ASSEMBLY "cc"

Notes:

1. Line conductors to be in center of connectors for protection as shown.
2. Connectors to be tightened by using two wrenches to avoid kinking conductors.
3. Copper wire shim 2" long at third connector to prevent nicking of conductor.

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
l		Clamp, Deadend					
p		Connectors as req'd					
s		Clevis, secondary, swinging insulated					

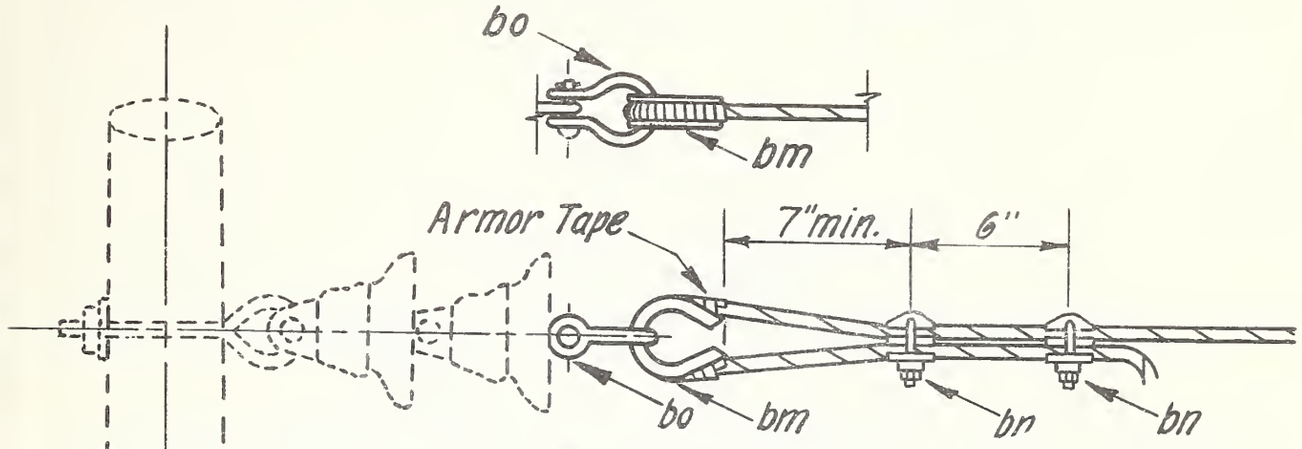
DEADEND ASSEMBLY GUIDE
SOLID COPPER CONDUCTOR #4 AND #6

No.	REVISION	Date:
1	Reissued	8-56

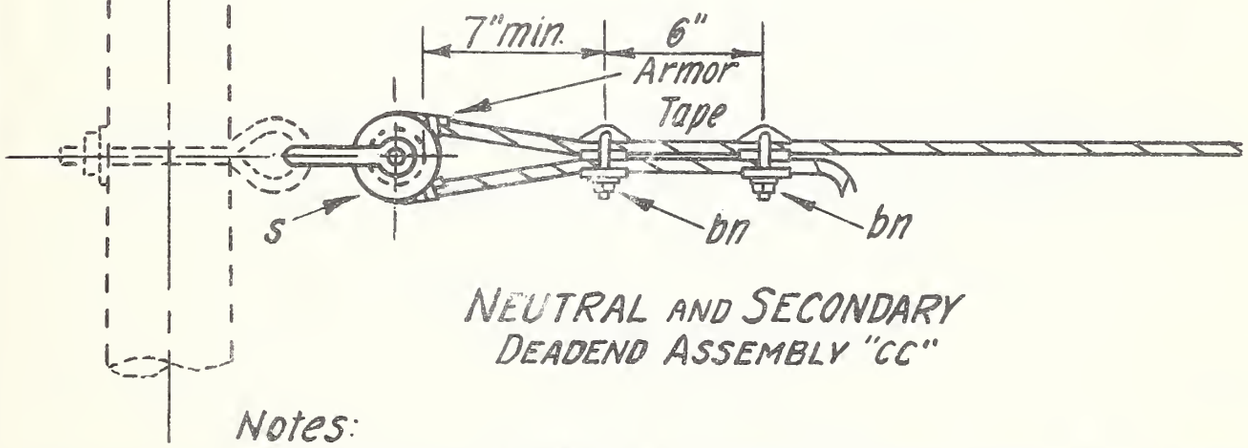
Scale: 1½"=1'-0

Date: Feb. 17, 1953

M42-4



PRIMARY
DEADEND ASSEMBLY "ca"



NEUTRAL AND SECONDARY
DEADEND ASSEMBLY "cc"

Notes:

1.-Armor tape wrapping to extend not more than two wraps beyond the mouth of guy thimble or spool insulator.

2.-For 1/0 and larger use 3" thimble clevis for primary, and spool insulator of 3" min. groove diameter for secondary and neutral.

3.-For alternate method of deadending primary and neutral conductors see Drawing M42-11

ITEM		MATERIAL		ITEM		MATERIAL	
s		Clevis, secondary, swinging, insulated		bo		Shackle, anchor	
bm		Thimble, guy, 5/8"					
bn		Clamp, loop deadend					

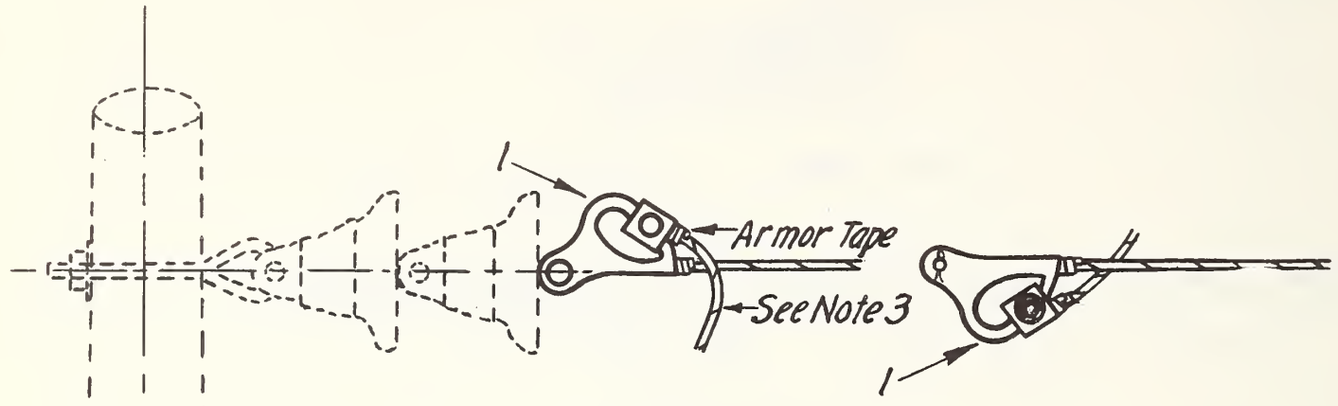
1	Reissued	8-56
Nº	REVISION	DATE

DEADEND ASSEMBLY GUIDE
A.C.S.R. CONDUCTORS

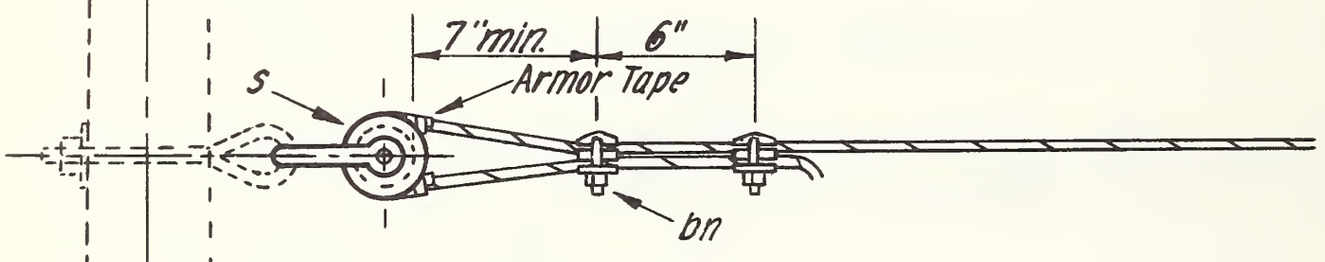
Scale: 1½"=1'-0"

Date: Feb. 17, 1953

M42-10



PRIMARY
DEADEND ASSEMBLY "ca"



NEUTRAL AND SECONDARY
DEADEND ASSEMBLY "cc"

Notes:

1. - Armor tape wrapping to extend not more than two wraps beyond the mouth of deadend clamp or spool insulator.
2. - For alternate method of deadending primary and neutral conductors, see Drawing M42-10.
3. - Bend pigtail away from line conductor to avoid chafing.
4. - Armor tape wrapping not required when aluminum or aluminum-lined clamps are used.
5. - For 1/0 and larger use spool insulator of 3" min. groove diameter on neutral and secondary deadends.

ITEM		MATERIAL		ITEM		MATERIAL	
1		Clamp, deadend					
bn		Clamp, loop deadend					
s		Clevis, secondary, swinging, insulated					

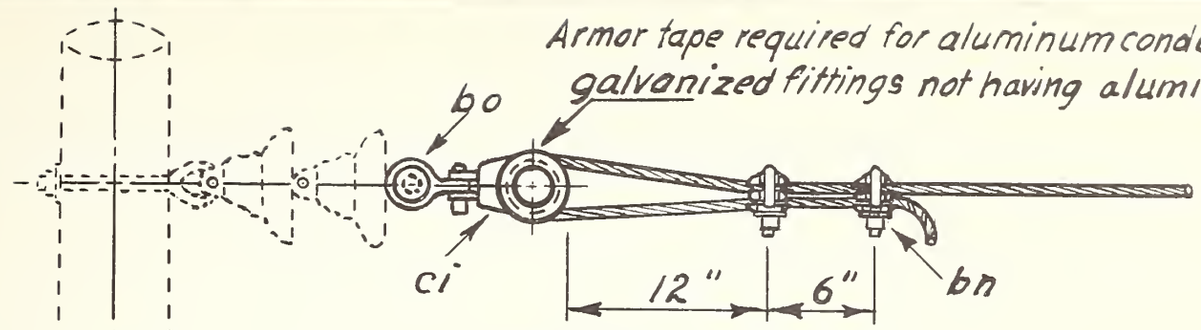
DEADEND ASSEMBLY GUIDE - DEADEND CLAMP METHOD
A.C.S.R. CONDUCTORS

Nº	REVISION	DATE
1	Reissued.	8-56

Scale: 1½" = 1'0

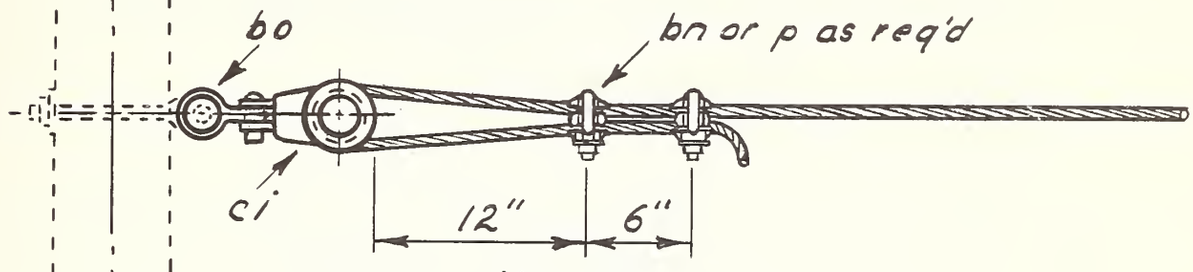
Date: Feb. 17, 1956

M42-11



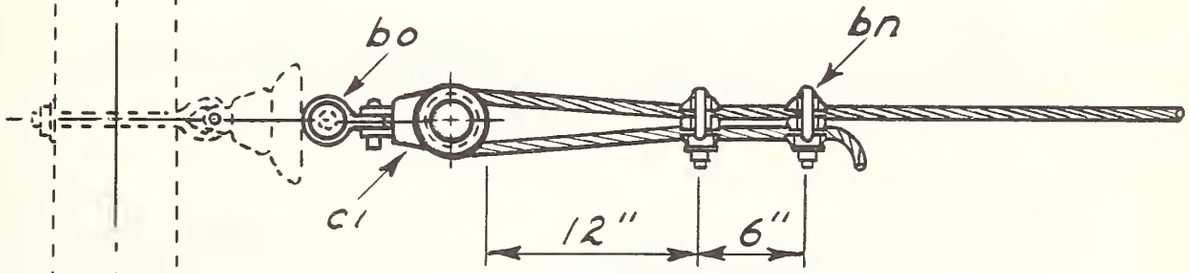
PRIMARY

Deadend Assembly "ca"



NEUTRAL

Deadend Assembly "cb"



SECONDARY

Deadend Assembly "cc"

NOTES:

These assemblies or deadend clamps should be substituted for other assemblies using the guy thimble and anchor shackle or other equivalents on the primary, and the secondary clevis on neutral and secondary when the breaking strength of the conductor is more than 4500 pounds.

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
bn		Clamp, loop deadend or		bo		Shackle, anchor	
p		Connectors, as req'd.		ci		Clevis thimble, side op'ng	

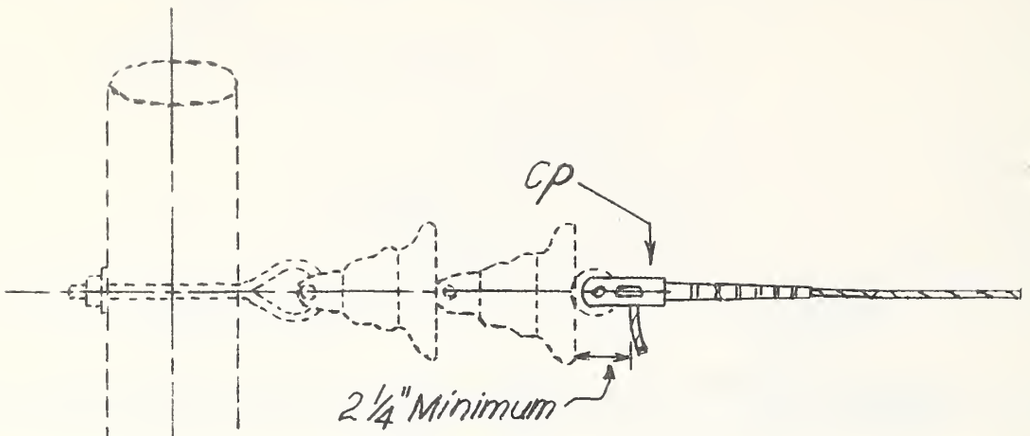
Nº	REVISION	DATE
1	Reissued	8-56

DEADEND ASSEMBLY GUIDE (LARGE CONDUCTORS)

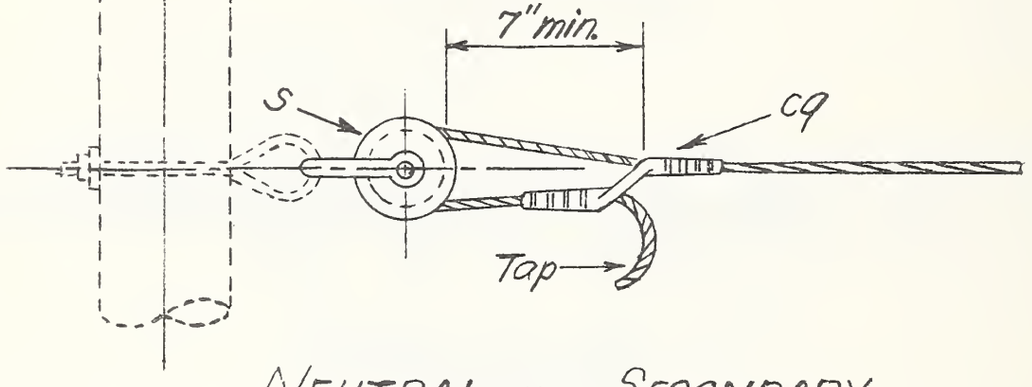
Scale: 1" = 1'-0"

Date: Jan. 20, 1948

M42-13



PRIMARY
DEADEND ASSEMBLY "CA"



NEUTRAL AND SECONDARY
DEADEND ASSEMBLY "CC"

ITEM	NO. REQR.	MATERIAL	ITEM	NO. REQR.	MATERIAL
S		Clevis, secondary, swinging, insulated	cq		Sleeve, offset, splicing
cp		Sleeve, deadend, compression			

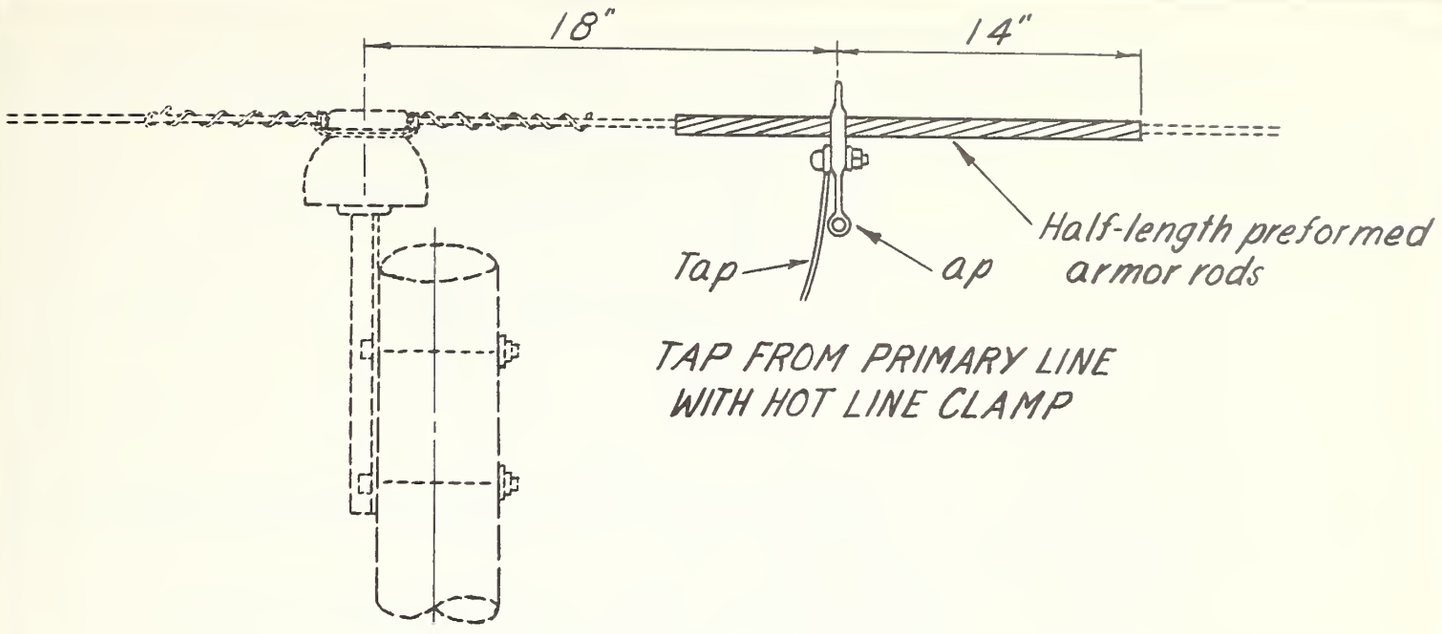
DEADEND ASSEMBLY GUIDE - COMPRESSION METHOD
COPPER TYPE CONDUCTORS

No.	REVISION	DATE:
1	Reissued	8-56

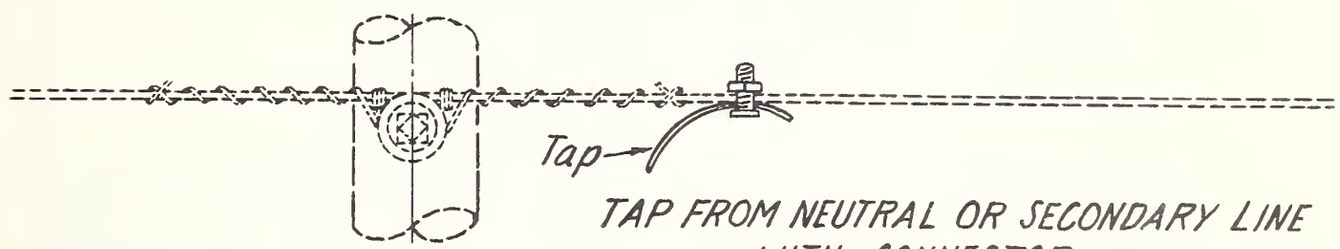
Scale: 1 1/2" = 1'0"

Feb. 17, 1953

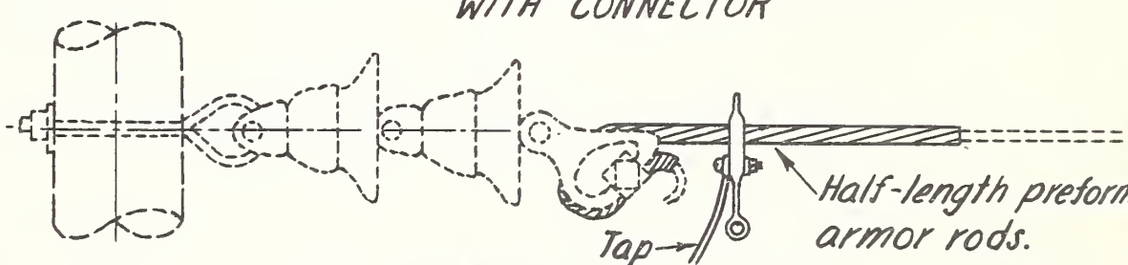
M42-21



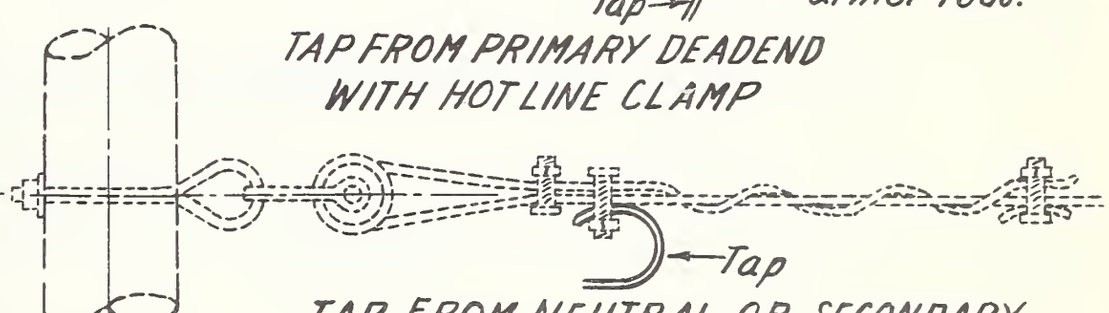
TAP FROM PRIMARY LINE WITH HOT LINE CLAMP



TAP FROM NEUTRAL OR SECONDARY LINE WITH CONNECTOR



TAP FROM PRIMARY DEADEND WITH HOT LINE CLAMP



TAP FROM NEUTRAL OR SECONDARY DEADEND

NOTES:

1. Taps to be slack.
2. For details of deadends see drawing NO. M42-A
3. Arrangement shown on M42-10 may be used for neutral and secondary deadend if preferred.

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
p		Connectors, as required					
ap		Clamp, hot line, tap assembly					

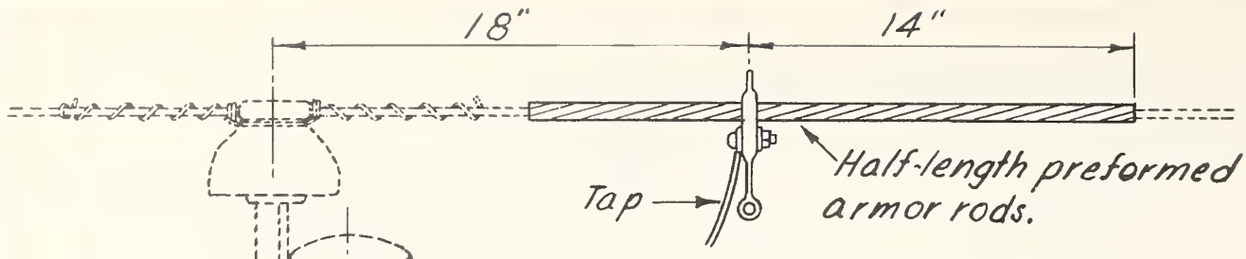
TAP ASSEMBLY GUIDE SOLID COPPER CONDUCTORS

Scale: 1½"=1'-0"

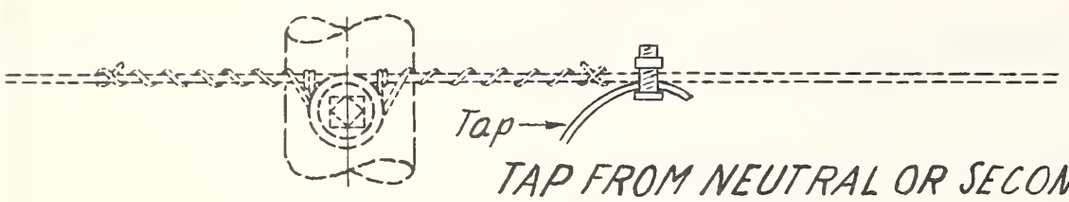
Date: Aug. 2, 1949

M43-3

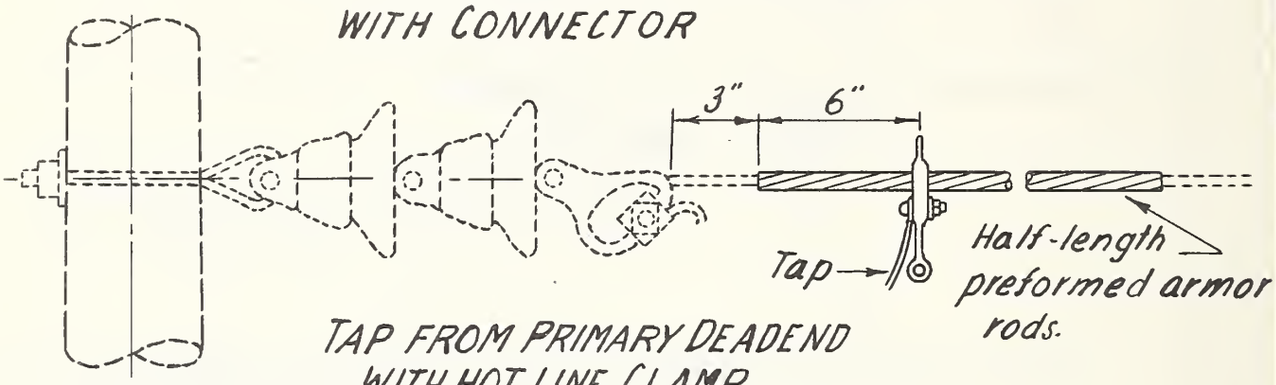
NO.	REVISION	DATE:
1	Reissued	8-56



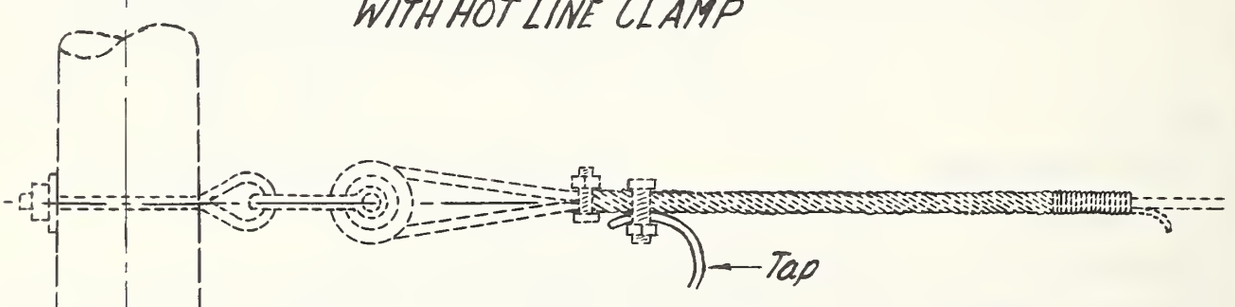
TAP FROM PRIMARY LINE



TAP FROM NEUTRAL OR SECONDARY LINE WITH CONNECTOR



TAP FROM PRIMARY DEADEND WITH HOT LINE CLAMP



TAP FROM NEUTRAL OR SECONDARY DEADEND

NOTES:

1. Taps to be slack
2. For details of deadends see drawing No. M42-3.
3. Arrangement shown on M42-10 may be used for neutral and secondary deadend if preferred.

ITEM	NO. REQ'D.	MATERIAL		ITEM	NO. REQ'D.	MATERIAL	
p		Connectors, as required					
ap		Clamp, hot line, tap assembly					

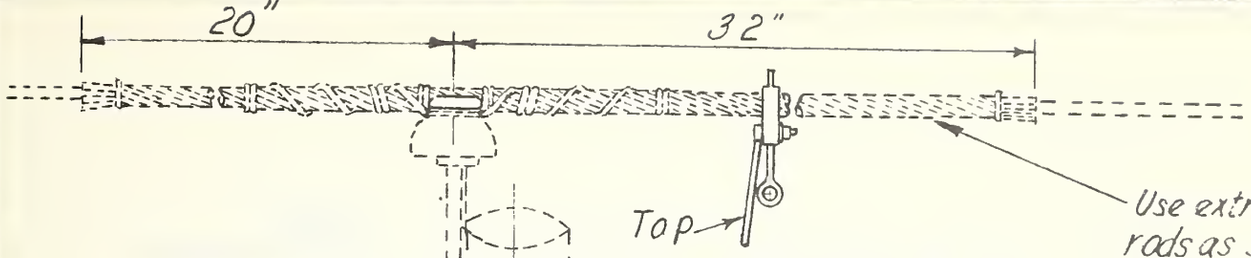
NO.	REVISION	DATE:
1	Reissued	8-56

TAP ASSEMBLY GUIDE
COPPERWELD-COPPER AND STRANDED COPPER CONDUCTORS

Scale: 1½"=1'-0"

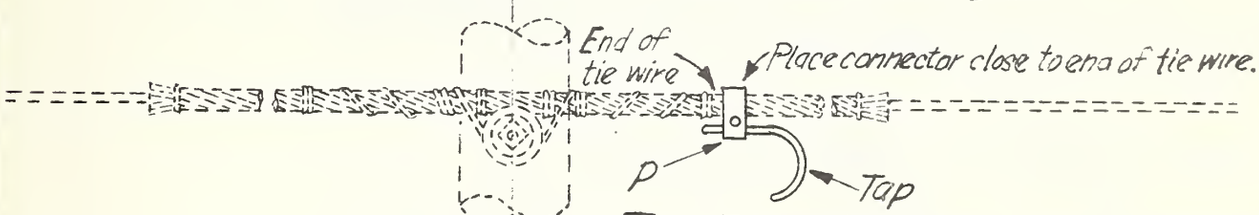
Date: Aug. 2, 1949

M43-4

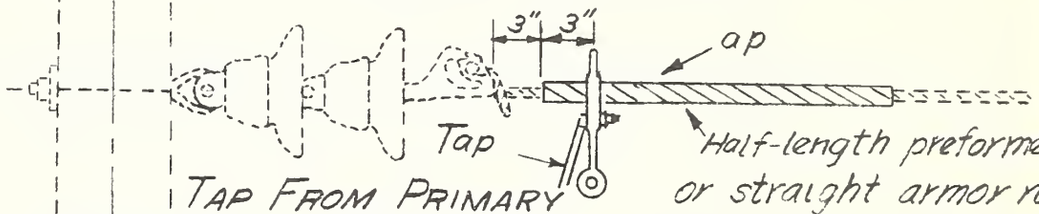


(See Note No. 2)

TAP FROM PRIMARY LINE WITH HOT LINE CLAMP

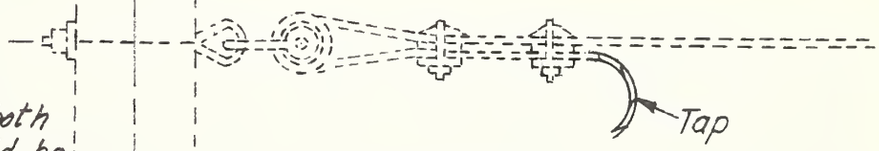


TAP FROM NEUTRAL OR SECONDARY LINE WITH CONNECTOR



TAP FROM PRIMARY DEADEND WITH HOT LINE CLAMP

For tap without hot line clamp, omit half-length armor and extend pigtail from clamp.



TAP FROM NEUTRAL OR SECONDARY DEADEND

NOTES:

1. When installing armor rods on existing lines both conductor and rods should be wire brushed or scraped to provide clean contacts.

2. Hot line clamp should be located as close to the end of the tie wire as passible in order to avoid jumper failure due to vibration.

ITEM	No. REQ'D	MATERIAL		ITEM	No. REQ'D	MATERIAL	
P		Connector (parallel groove clamp)					
ap		Clamp, hot line, tap assembly					

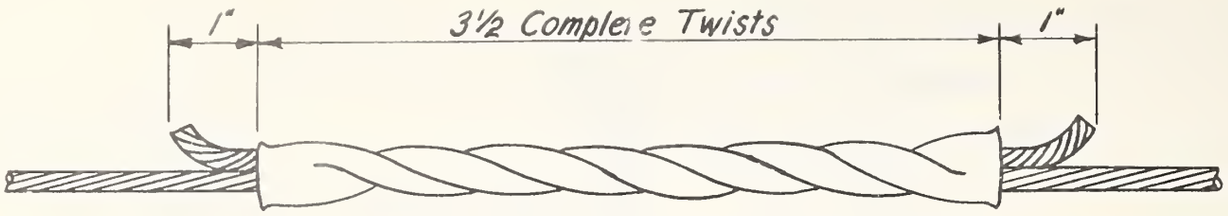
TAP ASSEMBLY GUIDE A.C.S.R. CONDUCTORS

Scale: 1"=1'-6"

Date: Feb. 17, 1953

M43-10

No.	REVISION	DATE
1	Reissued	8-56



Single Tube, Oval, Copper Sleeve

NOTE -

Before making joint be sure that inside of tube and ends of conductor to be inserted in tube are free from dirt and grease, etc., in other words - perfectly clean.

Splice shall not be within 10 feet from insulator.

For 9½ D, and 3 no. 12 Copperweld strands use same as 8C Copperweld-copper.
For #4 and #6 copper make 4 complete twists.

On stranded conductors each sleeve should be twisted so that its helix is in the opposite direction to the lay of the strand.

SIZE OF CONDUCTOR	NUMBER OF WIRES.	SLEEVE LENGTH, INCHES.	WEIGHT OF SLEEVE, POUNDS.
#3/0 - 7 Strand HD Copper	7	18	.95
#2/0 - 7 Strand HD Copper	7	16	.74
#1/0 - 7 Strand HD Copper	7	14	.60
#1 - 3 Strand Copper	3	14	.60
#2 - 3 Strand Copper	3	12.5	.40
#4 - Copper Wire	1	7.5	.13
#6 - Copper Wire	1	6	.07
#4A Copperweld-Copper	3	11	.31
#6A Copperweld-Copper	3	8.5	.16
#8A Copperweld-Copper	3	7.5	.13
#8C Copperweld-Copper	3	6.75	.11
#8D Copperweld-Copper	3	8.5	.16

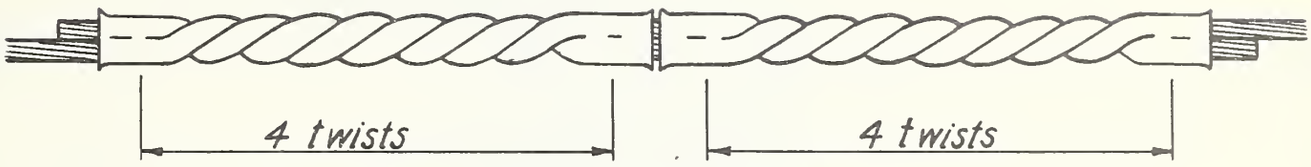
NO.	REVISION	DATE
1	Reissued	8-56

SPLICING GUIDE - OVAL TUBE TYPE
COPPER AND COPPERWELD - COPPER

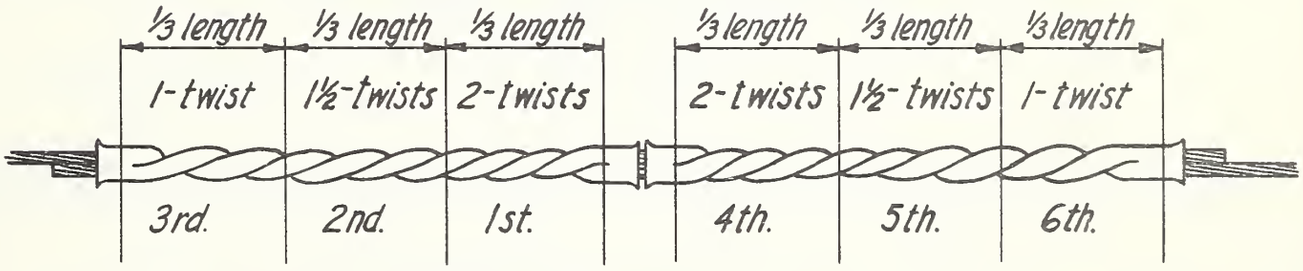
Scale: N.T.S.

Date: June 8, 1948

M45-1



For sizes Nos. 2, 4, and 6



For sizes 1/0 and larger

NOTES:

For sizes 1/0 and larger give each sleeve 4½ complete twists distributed as shown in sketch. This requires three different settings of the twisting wrenches. Make these in the order shown in the sketch.

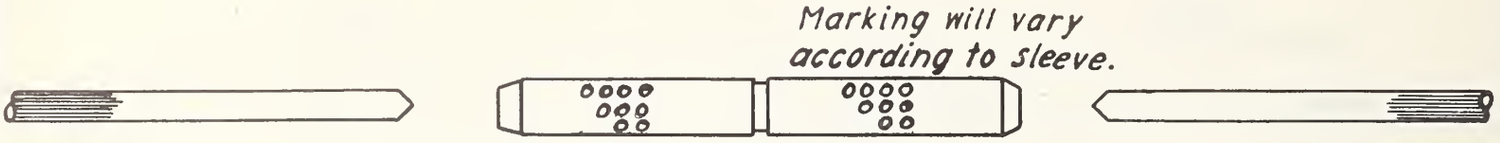
At the end of the joint the wrench should not be placed closer than ¼" to the end of the sleeve.

Before making joint be sure that inside of tubes and ends of cable to be inserted in tubes are free from dirt and grease, etc., in other words–perfectly clean.

Splice shall not be within 10 feet from insulator.

	SPLICING GUIDE A.C.S.R. CONDUCTOR	
1 Reissued	Scale: N.T.S.	Date: Feb. 17, 1953
No. REVISION		M45-10
	DATE	

1	Reissued	8-56
No.	REVISION	DATE



COPPER COMPRESSION SLEEVE
BEFORE SPLICING

COPPER COMPRESSION SPLICE COMPLETE

NOTE:

Clean the wire with abrasive cloth before making the splice.
Splice shall not be within 10 feet of insulator.
Begin presses at center of sleeve and work toward ends, press entire length of sleeve, spacing presses about 1/16" to 1/8" apart.
Groove letters printed on sleeves correspond to groove letters printed on tool, as a 41-MJ tool takes both "M" and "J" sleeves, a 51-XJ tool takes both "X" and "J" sleeves and so on.

1	Reissued	8-56
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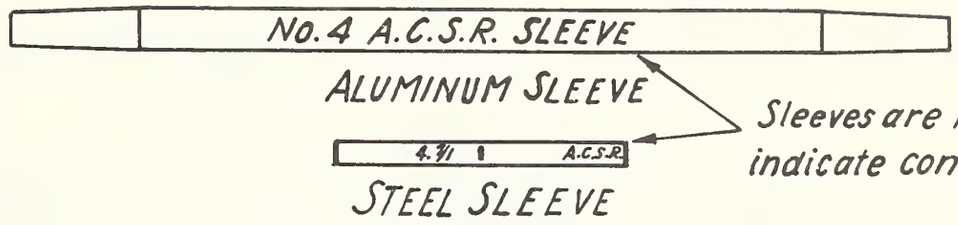
SPLICING GUIDE-COMPRESSION TYPE
COPPER TYPE CONDUCTORS

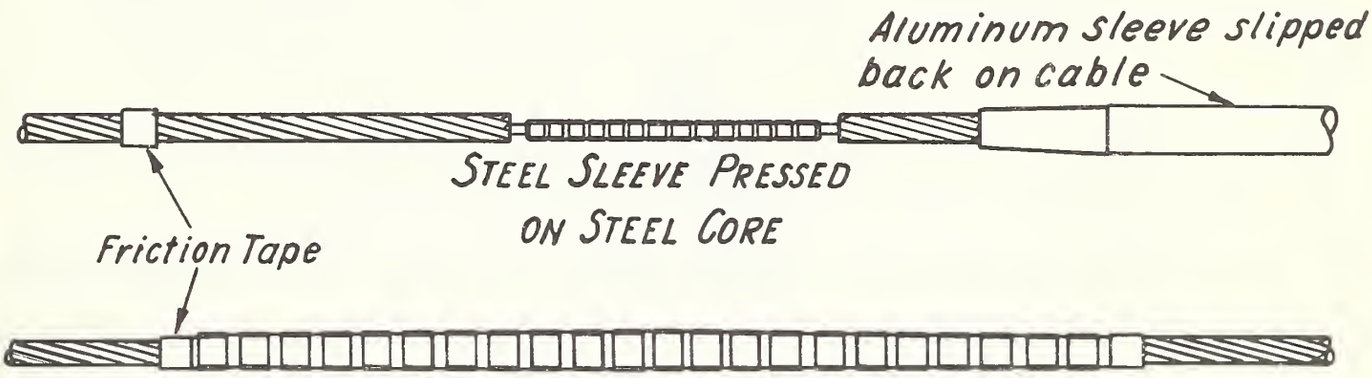
Scale: N.T.S.

Date: Feb. 17, 1953

M45-20



A. C.S.R. READY FOR SPLICING



COMPLETED SPLICE

DIRECTIONS FOR MAKING A.C.S.R. SPLICE

1. Slip Aluminum Sleeve on cable far enough back to be out of the way. Cut back Aluminum Strands at end of cable 3/8" more than half the length of steel sleeve.
2. Insert steel core wires in the steel sleeve and press with inner groove of tool. Press entire length of sleeve starting at the middle and working toward the ends. Leave about 1/16" space between presses.
3. Straighten steel sleeve by hammering carefully against a suitable block.
4. Place a piece of friction tape on the cable to mark the position of the end of the Aluminum sleeve such that it will be centered on the splice.
5. Paint the steel sleeve, and the adjacent cable that will be covered by the Aluminum sleeve, with a suitable corrosion inhibitor such as a filler paste of 70% zinc chromate and 30% raw linseed oil, or such other inhibitor as may be approved by the conductor manufacturer.
6. Slip the Aluminum sleeve in place and press with the outer groove of tool using the same procedure as with the steel sleeve.
7. Straighten entire splice by hammering carefully against a suitable block.
8. Splice shall not be within 10 feet from insulator.

1	Reissued	8-56
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SPLICING GUIDE-COMPRESSION TYPE A.C.S.R. CONDUCTOR

Scale: N.T.S.

Date: Feb. 17, 1953

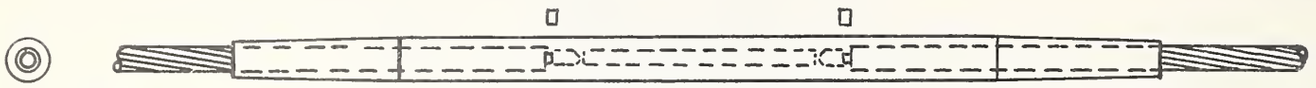
M45-21

TUBULAR ALUMINUM SLEEVE

Sleeves marked for conductor size and catalog number.

TUBULAR STEEL SLEEVE

A.C.S.R. READY FOR SPLICING



BEFORE COMPRESSION - TUBULAR COMPRESSION JOINT FOR A.C.S.R.

AFTER COMPRESSION - TUBULAR COMPRESSION JOINT FOR A.C.S.R.

METHOD OF APPLYING TUBULAR COMPRESSION JOINT

Caution: Before applying make sure the bores are thoroughly clean.

1. Slip the aluminum compression sleeve over one cable end and back it out of the way along the cable.
2. Using a hack saw, cut off the aluminum strands from each cable end, exposing the steel core for a distance of about 3/8" more than half the length of the steel compression sleeve. Use care not to nick the steel core with the saw. Before cutting serve the cable with wire just back of the cut.
3. Insert the steel core ends into the steel compression sleeve, making sure that the ends are jammed against the stop in the middle of the sleeve.
4. Compress the steel sleeve over its entire length, using the compressor dies marked "S" in their catalog number, making the first compression at the center and working out towards the ends, allowing dies to always overlap their previous position.
5. Remove serving from the cable and slip the aluminum sleeve over the steel joint. Center the aluminum sleeve by sighting the ends of the steel joint thru the filler holes provided in the aluminum sleeve.
6. Using the pressure gun equipped with the tapered nozzle provided with the Model "B" compressor equipment, inject a filler paste thru both holes in the aluminum sleeve until the space between it and the steel joint is completely filled. This can be observed thru the filler holes. The nozzle of the pressure gun should be jammed tightly in the filler holes to prevent the paste oozing back during injection.
7. Insert the plugs in the filler holes and hammer them firmly in place. They will be securely locked in compressing the aluminum joint.
8. Finally, compress the aluminum sleeve, using the dies marked "A" in their catalog number. Make the first two compressions with the inner edges of the dies matching the positions stencilled on the aluminum sleeve. Make additional compressions advancing to ends, allowing dies to always overlap previous position.

NOTE:- Filler paste preferred is composed of approx. 70% zinc chromate, 30% raw linseed oil, by wgt. Source of this material may be obtained from nearest sales office.

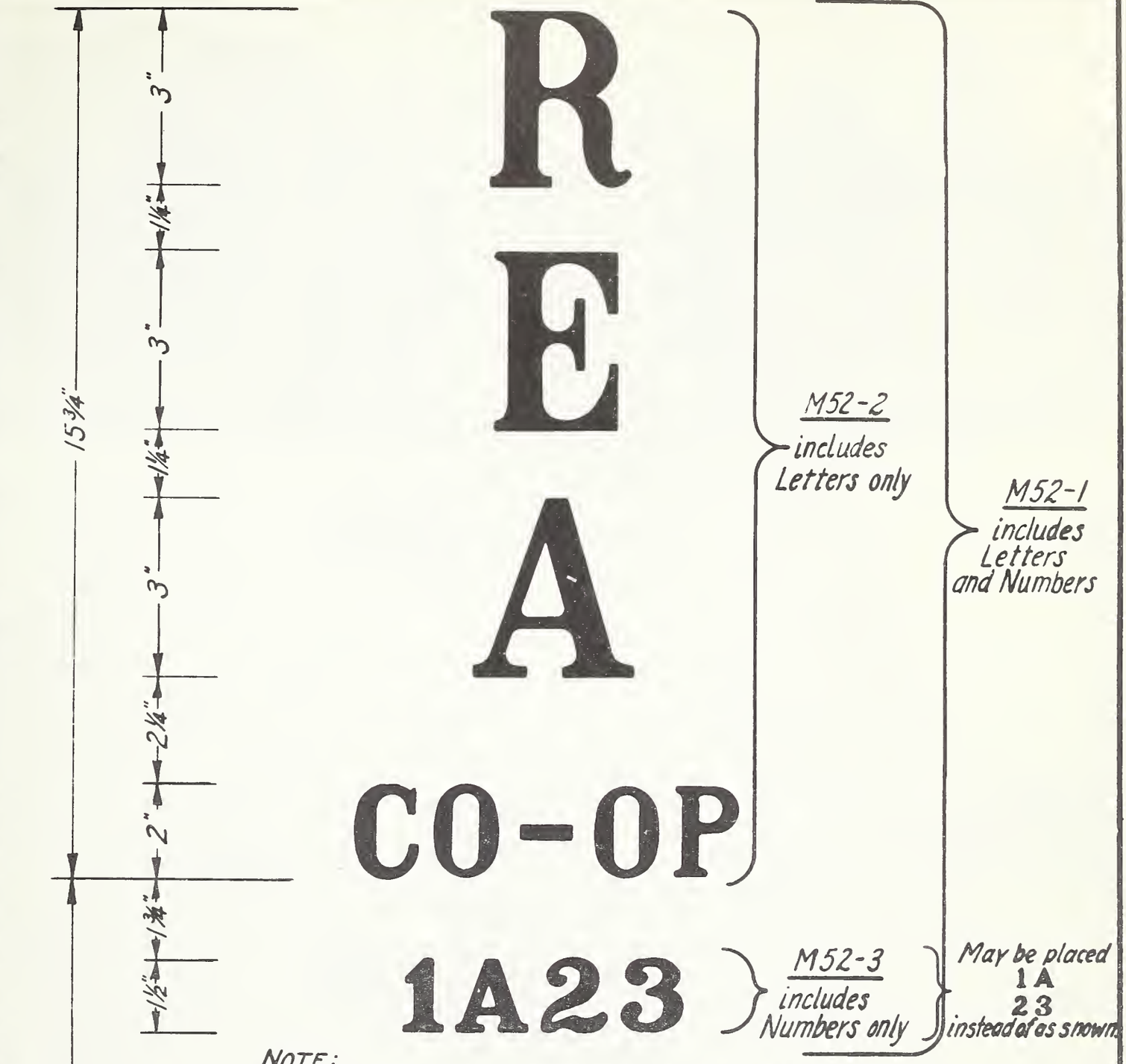
SPLICING GUIDE - COMPRESSION TYPE A.C.S.R. CONDUCTORS 2/0, 3/0, 4/0 (1/0 OPTIONAL)

Nº	REVISION	Date
1	Reissued	8-56

Scale: N.T.S.

Date: May 18, 1948

M45-22



NOTE:

Pole numbers and letters shall be of cutout aluminum or electro-galvanized soft steel, fastened to pole with at least 1" nails, barbed full length with galvanized round head.

R E A to be 3" high; Co-op to be 2" high.

1A23 to be 1½" to 3" high. If 3" characters are used they should be placed vertically instead of as shown: Legends to be staggered 30° from direct facing highway. When line crosses highway or R.R. legend should face same. On poles having limited climbing space due to special equipment, legend should be so located as to leave climbing space quadrant unobstructed.

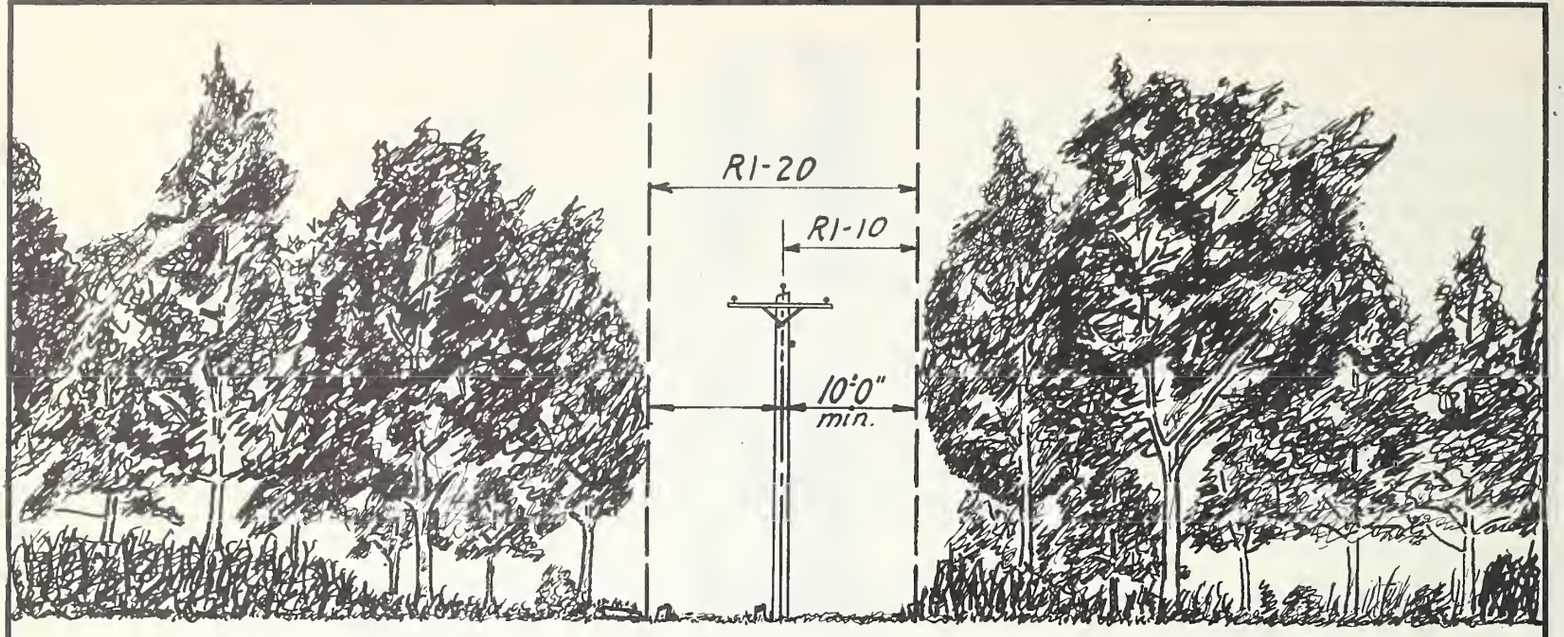
1	Reissued	8-56
No	REVISION	DATE

POLE NUMBERING AND MARKING

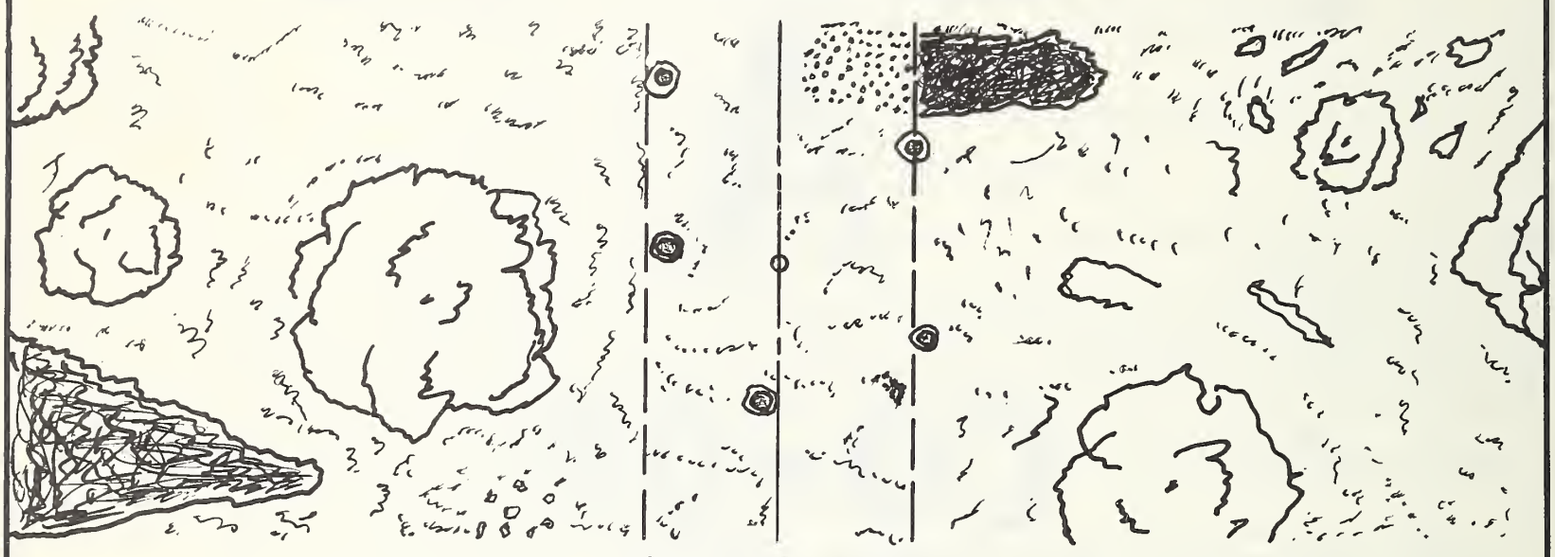
Scale:- N.T.S.

Date:

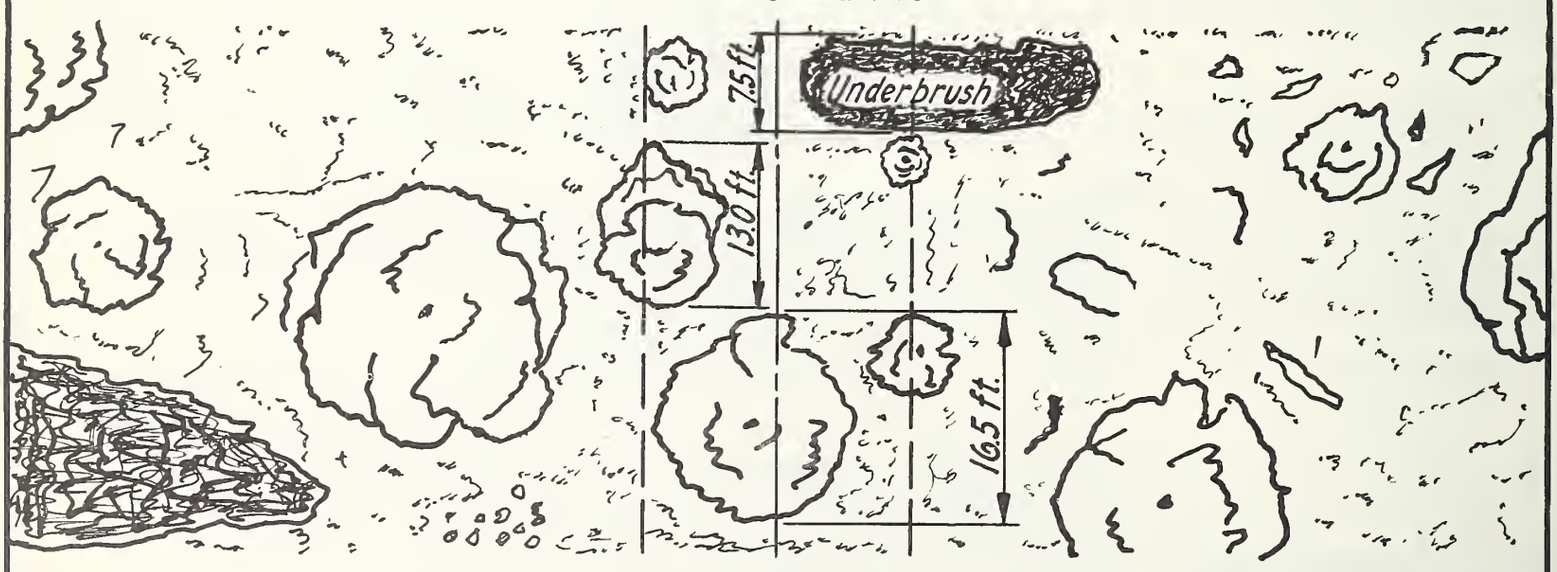
M52-1, M52-2, M52-3



ELEVATION



AFTER CLEARING



BEFORE CLEARING

CLEARING RIGHT-OF-WAY GUIDE

No	REVISION	DATE
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Scale: 1/16"=1'0"

Date:

R1

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